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Edited by
J. STAFFORD and H. CAMPION

Chairman of the Editorial Board
Professor G. W. DANIELS

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Recent Changes in the Organisation of the Japanese Cotton Industry

I CANNOT attempt to present in the course of this paper a complete and detailed account of the present organisation of the Japanese cotton industry. My task is much less ambitious. I propose to examine a few of the outstanding changes that have taken place since 1929, and to discuss briefly the main causes of the recent improvement in the efficiency of the industry. I hope to avoid, so far as I can, a repetition of facts that are already well-known, and my paper will take the form of notes upon particular topics rather than of a comprehensive survey. I ought to indicate at the outset the sources of my data and my own limitations in interpreting them. During a recent visit to Japan for the purpose of investigating the so-called rationalisation movement, I had the opportunity of seeing a few cotton mills and of discussing various aspects of the cotton industry with leaders in that trade and with Japanese economists. My information is largely derived from these sources. I cannot pretend to possess much technical knowledge, and you may feel some justifiable scepticism when I touch upon technique. However, technical knowledge is a double-edged weapon in an enquiry of this kind. The Japanese seem well-disposed towards mere academic investigators, and they gave me as much help as I could reasonably expect. But their willingness to welcome foreigners (especially Englishmen) in this industry varies inversely with the technical knowledge that their guests possess. I feel, then, that my ignorance was, in some measure, a passport to favour in this industry.

SECTION I.

It is well-known that in the spinning and weaving processes in the cotton industry a broad distinction may be drawn between the section which consists of the large firms engaged in both

spinning and weaving, and the section that is composed of specialist weavers. A close examination of the industry, however, shows that within each of these sections many great differences exist between the activities and nature of the various firms, and also that some important producing units are not accommodated within either of these two classes. Thus, while the majority of the spinning companies also control weaving sheds, a considerable number of them are engaged solely in spinning. In 1929 there were seventeen specialist spinning companies with 553,000 spindles (or 8.4 per cent. of the total). By 1935 there were twenty-six companies with 1,126,000 spindles (or 10.9 per cent. of the total) in this group(1). Most of these companies had very small mills, but there are a few notable exceptions. In view of the alleged superiority of vertical integration over horizontal specialisation, it may seem surprising that the group of specialist spinning mills has actually grown relatively and absolutely during the last seven years. It is doubtless to be explained by the rapid development of the cotton hosiery trade and of specialist weaving mills, to which I shall refer later on ; and the not insignificant place occupied by these spinners is indicative of the fact that the spinning branch of the industry cannot be treated as homogeneous ; it consists of firms catering for a variety of markets and so faced with problems that differ from one to another.

Again, very great differences exist among the integrated firms in respect both of their size and also of their dependence upon the outside market for the disposal of their yarn. The size of the firms may be discussed in connection with the changes that have occurred in spinning capacity over our period. The table on page 20 (Table A.) shows that the three largest companies possessed in 1929 about one-third of the ring-spindles in Japan Proper, while the seven largest companies had 56 per cent. Between 1929 and 1935 one of these large companies (Godo) combined with Toyobo, thus creating the largest spinning company in Japan with one and a half million spindles, and in 1935, this company, together with the remaining five large

[1] The figures in this paper have been taken from the half-yearly reports of the Japan Cotton Spinners' Association, except when otherwise stated.

companies, possessed 48 per cent. of the spindles. Thus, while the spindleage of the large company group had greatly increased, and while some concentration had taken place within it, that group as a whole had not maintained its relative importance, and the tendency of the decade before 1929 had, in fact, been reversed. This movement was, no doubt, to be expected in a period in which equipment and output were rapidly expanding.

If we look at the rest of the spinning industry a remarkable growth is seen to have occurred in the size of the firms. In 1929 no less than fifty-five companies out of a total of sixty-eight had less than 100,000 spindles, and these companies together owned over two million spindles or 30 per cent. of the total. By 1935, while the number of companies had risen to seventy-two, only forty-four had less than 100,000 spindles. These possessed 1,514,000 spindles or only 14 per cent. of the total. So the small companies are tending to disappear from the Japanese spinning industry ; and the most marked change in our period has been the rise of companies of intermediate size. Excluding the seven largest companies, there were in 1929 only six companies with more than 100,000 spindles ; these possessed 14.4 per cent. of the total. In 1935 (excluding the same large company group now reduced to six) there were twenty-two companies with over 100,000 spindles, and these together owned 38 per cent. of the total. The greatest development had taken place in the 100,000-200,000 group. In 1929 there were only four companies of this size with 7.7 per cent. of the total spindles ; in 1931 seventeen companies with 21.5 per cent. of the total (see Table B.) The growth in the number of firms of intermediate size has been due mainly to extensions of existing mills or the establishment of new ones, rather than to a process of amalgamation.

The changes of the period may be summed up as follows :

(1) There was a slight decline in the relative importance of the giant companies, in spite of a large absolute increase in their spindleage.

(2) Small firms have greatly diminished in number.

(3) Firms of intermediate size have increased in number and are now taking a much greater share of the trade than formerly.

Even more striking changes have occurred in the size of the mills as the Table C. on page 21 indicates. In 1929 only 8 per cent. of the spindles were in mills with over 100,000 spindles ; in 1935 this percentage had increased to 24. In 1929 half the capacity was found in mills with under 50,000 spindles ; in 1935 the proportion had fallen to one-third. Even within this group there has been a tendency to enlargement ; for the average number of spindles per mill in it rose from 24,000 to nearly 30,000 during this period. It is clear that the growth in the spinning branch of the Japanese cotton industry had taken place mainly through the increase in the size rather than in the numbers of its mills.

In spite of the increasing range of counts produced by the Japanese industry, there is not, as yet, a very clear distinction between the fine, medium and coarse spinners. On the whole, the small companies appear to concentrate on the coarser counts, though there are some that spin medium and fine counts ; while the largest concerns have a wide range. Some degree of specialisation, however, is exhibited by firms in this group. For instance, Toyobo, Dai Nippon and Kurashiki produce mainly low counts, averaging about 24's, and use a high proportion of Indian cotton in their mixtures ; Kanebo is chiefly concerned with medium counts, and the bulk of the cotton used is American ; Fuji Gasu and Nisshin are still higher up the scale and use a high proportion of Egyptian cotton ; but it is difficult to say whether this kind of specialisation is increasing or not.

In the manufacturing activities of the spinning-weaving firms we find a high degree of concentration. In 1929 the seven giant firms had 50.3 per cent. of all the looms owned by spinning-weaving companies, while twenty-two companies owned four-fifths of the total. In 1935 the six largest concerns had 53.4 per cent. of the total, and four-fifths of the looms were in the hands of eighteen companies. There has thus been some concentration in this branch of activity. But the most interesting feature revealed by an examination of the figures is the wide differences in the ratio of looms to spindles in these concerns, differences, moreover, which are by no means tending to disappear. In the three largest firms the ratio does not differ

greatly ; but the rest exhibit striking contrasts. Nisshin has a ratio of 1.80 ; Fuji Gasu 1.166 ; and Kurashiki 1.278 ; and equally remarkable disparities can be found in other firms. Now if vertical integration makes possible more economical production than horizontal specialisation, one would expect to find a balance existing between looms and spindles in each of the firms, or at any rate a tendency towards an optimum relationship. Nothing of the kind can be discovered. The explanation seems to be that each of the great firms represents to a large degree merely a financial fusion of mills that are, from a technical, managerial and marketing standpoint, separate units catering for different markets.

A glance at the history of the Japanese cotton industry will show how this situation has been created. In the early post-Restoration period (*i.e.*, after 1867) Japan imported yarn for manufacture by multitudes of domestic weavers situated mainly in country districts. The first spinning mills were set up to replace this imported yarn. Later, large mills were established at Osaka and other coastal towns to produce yarn for export. When this trade diminished the large spinners who had no domestic market close at hand added weaving sheds to their mills and began to produce fabrics for export. For example, the Nagasaki Cotton Spinning Company began its career as a producer of yarn for export to Hong Kong ; but the decline of this trade forced it into the production of piece goods for export, and its name was changed to the Nagasaki Cotton Spinning and Weaving Company. Yet, while the export spinners were forced to develop in this way, opportunities for specialist spinning mills, situated in centres where many weavers were to be found, continued to increase. Japan is a country in which financial power is highly concentrated. It was natural, therefore, that the big spinning-weaving firms with great resources should play their part in establishing new spinning mills in weaving centres, and that in times of financial stress the smaller mills should pass under their control. The kind of grouping that is now found has depended on the date when the companies were established, the extent of their financial resources, and the degree to which it has seemed advisable at different times to extend the sphere of control.

SECTION II.

Outside the spinning-weaving concerns, upon which attention is usually concentrated, a very large number of specialist weaving concerns exists. At the end of 1934 there were 377,000 looms in Japan, and these were distributed as follows: (The figures for 1929 are given for comparison)

	1934(1)	1929
SPECIALIST WEAVERS:		
Hand Looms	56,000	86,000
Narrow Power Looms	80,000	106,000
Wide Power Looms	150,000	93,000
SPINNING-WEAVING CONCERNS:		
Wide Power Looms	91,000	78,000
Total	377,000	363,000

These totals have, in fact, little meaning, for it is clear that the term "loom" is applied in this table to very different kinds of equipment varying greatly from one another in productive capacity. This point receives further emphasis when it is realised that while the looms owned by the spinning-weaving concerns are mainly automatic looms, the rest of the wide power looms are of the ordinary type. The table does bring out, however, the substantial decrease that has occurred since 1929 in the number of handlooms and narrow power looms, as contrasted with the increase in the number of wide power looms. It also suggests that the branch of the weaving industry that is in the hands of specialists, itself has several sub-divisions with different characteristics. Nearly four-fifths of the hand looms are to be found in sheds with from 1 to 9 looms, and these are engaged on producing narrow cloth for Japanese use. Many of them are still found in the homes of farmers where weaving is a subsidiary occupation of the female members of the families. But this part of the industry, which is bound up with their household system of manufacture, is rapidly dwindling. The narrow power looms some ten years ago formed the bulk of the equipment of the small weaving sheds with from ten to forty-nine looms, and at that time well over half of the looms of larger specialist weavers

[1] Statistical Year Book of Ministry of Commerce and Industry.

(those with fifty looms and over) were of that type. Since then their numbers have rapidly diminished, especially after 1929, and at the present time even in the small factory group (ten to forty-nine looms) the wide looms predominate ; while in the larger specialist mills they form about two-thirds of the equipment. A marked change has taken place, not merely in the equipment used by the specialist weavers, but also in the importance of different types of weaving sheds. Those with under ten looms have declined progressively ; the number of looms in the ten to forty-nine group has scarcely been maintained ; but since 1929 a very substantial increase has taken place in the relative importance of the larger weaving mill in this branch of the trade.(1)

This analysis of the equipment of different kinds of weaving mills helps us to understand how it is that mills of very different sizes can exist in Japanese industry. In fact, the various weaving sheds are catering for very different kinds of markets. This is obvious enough so far as the small and very small sheds equipped with narrow power or hand looms are concerned ; they are turning out fabrics for the manufacture of Japanese-style clothing. But an equally sharp distinction can be drawn between the types of cloth upon which the sheds of the combined spinning-weaving concerns and those of the specialist weavers using wide looms are respectively engaged. The former concentrate to a large extent upon standardised fabrics for which their organisation and equipment are well suited. Thus, of their total output in 1933, 58 per cent. (in quantity) consisted of shirtings, and over 14 per cent. of sheetings ; that is to say, nearly three-quarters of their total output was of these two classes.(2). In the specialist weaving mills, however, no such concentration on particular fabrics can be observed. Their most important product (drills and jeans) accounts for only one-fifth of their output of wide cloth,(3) which is made up largely of fancy goods and of fabrics less susceptible than those upon which the spinning-weaving mills are engaged to mass-

[1] See Table D.

[2] Uyeda and Minoguchi : *The Cotton Industry* (I.P.R. International Research Series), p. 19.

[3] *Ibid.*, pp. 19 and 67-70.

production methods. It is true, of course, that some of the great firms, like Kanebo, are pioneers in the introduction of new styles of fabrics and fancy goods; but the relative importance of this class is evidently quite small in the spinning-weaving mills.

It is interesting to consider the changes that have occurred since 1929 in the share of the piece goods output enjoyed by combined and specialist weavers respectively. We have already seen that the production of narrow cloth has been dwindling. It now amounts only to about three-quarters (in quantity) of the output of the pre-depression period; and in value wide cloth accounts for 85 per cent. of the total output of cotton textiles.[1] Let us see how this production is distributed between specialist and combined firms respectively. The British Cotton Mission reported that in 1929 the members of the Japan Cotton Spinners' Association produced between 55 and 60 per cent. of the wide cloth output (in quantity). In spite of the large absolute increase in the output of these firms, their production of the total diminished to under 50 per cent. in 1932 and to 44 per cent. in 1935.[2] In value this proportion would be lower, since the specialist mills are producing higher quality fabrics for the most part. Well over two-thirds of the piece goods output of the spinning-weaving mills is exported, compared with two-fifths of that of the specialist mills. The share of the total exports taken by the latter group, after falling during the depression, has now risen again, and in 1933 (the last year for which I have figures) they were responsible for 45 per cent. of the total exports (in square yards) and for over 50 per cent. of their total value.[3] As Japan is forced by competition and trade restrictions in her large markets to diversify her goods, it seems probable that the share of the specialist weavers will increase, since the integrated organisation of the great spinning-weaving concerns is directed to the production of standardised fabrics and confers no particular advantage in other lines. It should be noted that the bulk of the exports of the specialist weavers are apparently provided by the larger sheds.

[1] Mitsubishi Economic Research Bureau: *Japanese Trade and Industry*, p. 242.

[2] An estimate based on figures of Ministry of Commerce and Industry and of Japan Cotton Spinners' Association.

[3] Uyeda and Minoguchi, *op-cit.*, p. 19.

Japanese cotton weaving is thus seen to be composed of several distinct groups of firms, each faced with the task of serving particular markets. A closer analysis than that which I have been able to make would doubtless reveal further important sub-divisions. The small weavers with hand looms or narrow power looms are dealing with a market that has little in common with the markets secured by the great weaving sheds of the combined firms, or even those of the larger specialist weavers. The former are producing fabrics of narrow width and of varying qualities solely for home use, and the diversified character of their market preserves them from the competition of mass producers. Although this branch of the industry may be declining, yet so long as the Japanese retain their traditional habits of dress it is likely to retain a place of importance in the industry. The larger specialist weavers, again, are concerned with a wide variety of fabrics, and so are supplying different demands from the spinning-weaving mills which concentrate on a few standardised lines, largely for export. The relative importance of these two types in the future will largely depend on the kind of piece goods in which the growth of demand is most rapid. These considerations ought to be borne in mind when the structure of the Japanese industry is being compared with that of Lancashire.

SECTION III.

It is often said that the integration of spinning and weaving gives the Japanese a considerable advantage over competitors with a horizontal form of organisation; while apologists for Lancashire sometimes point to the fact that the cotton industry in this country was vertically organised during the greater part of the nineteenth century, and that horizontal specialisation became the typical form only during the thirty years before the Great War. In other words, they assert that the present structure of the Japanese industry is due to its immaturity. When confronted by this argument the Japanese reply that the combined spinning-weaving concern has a more important place in their industry at present than it had twenty years ago.

I do not think that the problem can be usefully discussed in these terms. An appreciation of the relative advantages of rival types of organisation requires a study of the purposes which each is required to serve, of the conditions attending the supply of the factors of production, and of markets. From what has been said above it would appear that in Japan the integration of spinning and weaving has been found to possess advantages only in the production of particular kinds of piece goods, standardised fabrics for which a mass demand exists. In these lines the advantages of integration are considerable. The chief of these appears to lie in the economies to be derived from specialisation. The spinning section of a combined mill usually concentrates upon a narrow range of counts and sends the bulk of its production to the adjoining weaving shed, which is specialising on one or two fabrics. To give an example, from one of the medium-sized mills I visited : the spinning section in which there were about 50,000 high draft spindles, was concerned with only three counts of yarn, and four-fifths of the output went to the weaving sheds in another part of the same building. Here there were 840 automatic looms which were concentrating on two kinds of fabric. The same company has nine other combined mills, each of which was specialising in much the same way, and its 6,000 automatic looms were concerned with only twenty kinds of cloth. This was a firm engaged in the upper end of the trade. In one of the Toyobo mills, producing coarse fabrics, a shop of 1,800 looms was concerned with only three qualities of cloth. Apart from the obvious economies attending this specialisation of plant, the mill owners claim that the close proximity of spinning and weaving enable any faults observed in the yarn in the course of manufacturing to be reported at once to the spinning mill, while "better methods of cotton mixing and spinning are sometimes discovered which would perhaps be overlooked if cotton yarns were being manufactured as the final object of production."[1] These advantages are, no doubt, very important in Japan, where the industry is not as highly localised as in

[1] From memorandum supplied by Mitsubishi Economic Research Bureau.

Lancashire. Further, the juxtaposition of spinning and weaving obviates processes like re-winding and packing which are necessary if the yarn has to be disposed of to independent weavers. In addition to the advantages attached to this type of technical unit, the large firms with numerous mills under their control appear to be able to reap economies through centralised buying of cotton bulk—a point to which I shall return, and quite small specialist spinning mills under their control may, of course, share in these economies.

As we have seen, however, the advantages to be reaped by the concentration of numerous mills under a common general ownership are evidently not sufficiently great to prevent a considerable development of independent spinning mills. And, in the same way, the advantages of combining spinning and weaving in the same mill are decisive only for a narrow range of goods and are outweighed by other factors over the greater part of the industry. Indeed, it may not be rash to suggest that the development of the combined spinning-weaving mill may be reaching its limit. The growth of restrictions on Japanese cotton imports into the main markets is reducing the profitability of the trade in grey standardised goods, and the industry has been forced to turn its attention to finished goods and to a wider variety of weaves to satisfy a growing diversity of markets. The Japanese Government's own policy seems likely to strengthen this tendency. With the object of fore-forestalling import restrictions in foreign markets the Government is trying to curtail the competition among Japanese producers and so to raise prices, and it has become so sensitive to the foreign view that by supplying cheap fabrics Japan has done a dis-service to the world, that it is encouraging the production of higher quality and higher-priced goods. For social and political reasons, moreover, in order to allay discontent among the smaller and medium-sized industrialists and merchants who are very critical of the activities of the great firms, the Government, through its laws concerning export and manufacturers' associations, is trying to support the small mills. All these restrictive devices must reduce the profitability of large mass production plants. The managing director of one of the large firms told

me that a year or two ago he would not have accepted an order for less than three hundred pieces, but that at present he would take orders for any quantity. He believed that if this tendency were to persist Japan's cotton industry would probably tend to assume a structure similar to that of Lancashire. A further indication of this trend is given by the fact that the big concerns have been investing to an increasing extent in other textile mills—wool and rayon.

I can only mention briefly the tendencies that have shown themselves recently in the relations of the main producing branches of the industry and the merchant firms. It is often said that the Japanese cotton industry owes some of its efficiency to the close association of the producing and the merchanting sections of the trades, for this enables a common policy to be worked out. Has this view any basis of truth? In the first place, it must be remembered that the specialist weavers who are responsible for three-fifths of the wide cotton cloth (including nearly half the exports) and for all the narrow cloth have no close connections of the kind here suggested. This branch of the industry has much the same relation to the merchants as its counterpart in England. The weavers buy their yarn through yarn agents and sell their piece goods destined for foreign markets, sometimes to local merchants who re-sell to exporters and sometimes direct to large or small exporters. These merchants send out the grey cloth for bleaching, dyeing and finishing. The great spinning-weaving firms are, of course, in closer touch with the big merchants who carry on both an import and an export trade. The latter sell the raw cotton to the spinners and contract to take the piece goods. Since their interests are closely linked, it often pays to help each other out of difficulties. If there is a glut of piece goods and yarn the exporters may help the producers to clear their stocks at little profit to themselves, because they know that their own sales of cotton and their own export business will be handicapped until the market has been relieved. And the merchants may, at such times, bring pressure to bear on the spinners to curtail production. But there is no common policy or programme worked out by merchants and spinners in conjunction. Very

frequently their interests seriously conflict, especially of late years in the administration of the export quotas.

Part of the misconception about the close association of merchants and spinners in Japan arises probably from the knowledge that Mitsui holds large interests both in Kanebo and in Toyo Menkwa, the largest merchant house. But, in fact, these are little more than financial interests, for Mitsui has long followed the policy of compelling each of its concerns to stand on its own feet. Thus, while Kanebo might give preference to Toyo Menkwa if no better terms were forthcoming from some other source, they would not do so if this involved them in higher costs; nor would Toyo Menkwa give Kanebo any preference in order to handle its business. The closer links which have, in fact, been forged recently between the merchanting and producing sections, have owed nothing to a desire for a common policy. They are, however, worthy of notice. During the last five years the "big three" among the cotton merchants have diminished greatly in importance. This decline has occurred through the establishment of numerous small firms of importers and exporters, many of them controlled by foreigners, especially Indians. Since the fall of the yen these have found it profitable to operate an export business from Japan instead of an import business in India; while the big Japanese houses have found that the cost of maintaining staffs abroad has much increased. The contraction of their business and the narrow margins of profits have led them to enter the field of production. Toyo Menkwa, for instance, now controls a number of spinning mills with a total spindleage of 700,000. A few of these mills owned by the merchants are in Shanghai, and were installed to produce yarn previously supplied by Japan for the China market. Some, including one Indian mill, were taken over as bad debts in 1930-1, and others were newly established or acquired as a means of providing more profitable investment than that now afforded by merchanting. These mills, though small, are said to be very efficient. Integration has also been brought about for other reasons. A short time ago Toyobo acquired a large interest in Gosho, one of the three great merchant houses. But this step was taken, not with the object of reaping advantages

from carrying on producing and merchanting under single control. It occurred because Gosho was threatened with insolvency, and because Toyobo, the largest purchaser of raw cotton, was not anxious to see the area of competition in the cotton market significantly reduced, as would indeed have happened if one of the three great cotton importers had disappeared.

Japanese spinners are said to be able to buy cotton of the same grades at lower prices than their British rivals. For instance, a firm dealing with both Lancashire and Japan estimated the difference at 5 per cent. in 1936. Various reasons are put forward to explain this discrepancy. Some emphasise the purchase by Japan of huge quantities of particular growths ahead of requirements, while Lancashire is said to select more carefully and to buy in small lots. Others point to the fact that the big merchants have used their financial resources to buy cotton in years of glut, and so have been able to meet the spinners' demands at low prices afterwards. The latter explanation seems to leave out of account the cost of carrying the cotton over the period, which must be borne by someone, and also the losses attending unsuccessful speculation of this kind. This may suggest a clue to the problem. The great producing firms have established a strong buying position *vis-à-vis* the merchants, and they have apparently managed to reap most of the advantages of successful speculation, while throwing on to the shoulders of the merchants the losses incurred in less fortunate times. It is said that during the last twenty-five years the merchant houses have lost from 100 to 150 million yen of capital through bankruptcy or through the writing down of shares.[1] Apart from this, huge losses which attended the depreciation of cotton in the slump of 1930-1 were borne by the Yokohama Specie Bank. The unprofitableness of this trade, which is now affecting even the largest merchants, is the reason why they are withdrawing their resources from it and are investing in industrial plants. Thus, to some extent, the low prices at which spinners have been able

[1] In the experience of one of the leading men in the cotton trade, an experience extending over a period of nearly thirty years, fifty-eight cotton merchants have gone out of business through bankruptcy. Failures were particularly numerous in the years 1924 to 1928.

to buy cotton have been at the expense of the other branches of the Japanese economy, and are not entirely the result of great efficiency in the conduct of the trade.

SECTION IV.

I must now pass to a discussion, brief it will inevitably be, of the changes that have occurred in the efficiency of spinning and weaving. The published figures indicate that a remarkable increase in output per operative has taken place since 1929 in both of the main producing branches of the industry.

	Output per operative engaged in spinning mills of members of Japan Cotton Spinners' Association	Output per operative engaged in weaving mills of members of Japan Cotton Spinners' Association
1929 ...	... 7,000 lbs.	36,100 yards
1931 ...	... 8,400 ,,	48,800 ,,
1935 ...	... 9,300 ,,	49,500 ,,

It should be observed that these averages are obtained by dividing the total annual output of yarn or cloth by the average number of operatives per day engaged in spinning mills and weaving mills respectively. While the figures of yarn output cover practically the whole of the spinning industry, the figures of piece goods output apply only to that produced in the mills owned by members of the Japan Cotton Spinners' Association, that is to say, to about two-fifths of the wide cloth output of Japan.

How can this increase be explained ? Let us first turn to spinning. Between 1913 and 1928 there was apparently only a slight improvement in efficiency as measured by output per head, but since then the changes have been even more remarkable than the figures suggest, because of the greater concern of the industry with medium and fine counts. At first sight it would seem that no part of the increase can be attributed to a speeding up of the machinery ; for figures show the average output per ring spindle to be slightly less in 1935 than in 1929. This conclusion must be rejected, however, because we must take account of the increasing fineness of the yarn as well as of the reduction, brought about by legislation, of the time the spindles

were worked. Yet mill owners declare that only a small proportion of the increase can be attributed to speeding up, and we must look elsewhere for the significant changes which have permitted the economisation of labour.

The date when this improvement began is highly significant. In 1929 a Factory Law became effective which abolished night work in the industry, and involved also a reduction in the hours of work per shift. The leading companies had, of course, anticipated this change, and many of them carried out a re-organisation of their mills in preparation for it. About the same time there began an intense depression in Japanese industry. Apart from the effects of the world slump, the cotton trade was also badly hit at this time by the deflationary policy adopted by Japan after her return to gold in January, 1930. The response of the industry was exactly in accordance with the suppositions of the orthodox trade-cycle theorists. There was a widespread improvement in productive methods and in management; some of the less efficient mills disappeared or passed under the control of other companies and were re-organised; and there was a weeding out of inefficient workers. Nearly all operations were affected; but by far the most important change has consisted of the widespread adoption of high draft spinning, which has enabled the whole process to be much shortened; for instance, the roving operation seems to have been generally eliminated. It is this change to high draft which is responsible for most of the economies in labour that have occurred.[1] No figures showing the number of high draft spindles are available; but from information supplied to me from authoritative sources, it would seem that the bulk of the working spindles, which amount to over 8 millions out of a total of 10½ millions, are now newly installed high draft spindles or re-modelled high draft spindles. The introduction of this equipment on a significant scale began in 1929, and it has continued down to the present time. In the six large companies it is estimated that at present four-fifths of their total spindleage is high draft. Apart from these savings, costs have been reduced by the substitution of

[1] One competent authority informed the writer that four-fifths of the savings have been due to this cause.

female for male labour. In 1929 male workers accounted for 22 per cent. of the labour force ; by 1935 the percentage had fallen to 12. To some extent the fall in the number of men employed may have been brought about by an improvement in the equipment and lay-out of the mixing and blowing sections of the mills. But there has been much actual replacement of men by girls. Thus, in 1929, men were usually employed on the drawing frames, but now in most mills the work is done by girls. The improvement in internal transport, particularly by the widespread adoption of an overhead carrier system, has also enabled this substitution to take place. Again, power charges have been diminished during the last two or three years by the introduction of individual drives, and the efficiency of the workers is said to have responded noticeably to the great improvements that have occurred in lighting and in temperature and humidity control. I append the following table which throws some light on labour costs in spinning.[1]

Year	Average Count	Production per Spindle per day*	Daily Wages per 10,000 Spindles	No. of Male Workers per 10,000 Spindles	Average Daily Wage per Male Mill Hand	No. of Female Workers per 10,000 Spindles	Average Daily Wage per Female Mill Hand
		Momme	Yen		Yen		Yen
1929 (Dec.)	23's	88·0	323·9	56·9	1·59	206	1·14
1934 (Dec.)	24·5's	81·2	153·05	23·4	1·36	162	·75
1935 (Nov.)	25·3's	77·2	147·57	22·5	1·35	160·2	·73

* The first figure in this column is for the second half of 1928 ; the others are for the second half-years of 1934 and 1935.

In weaving the figures show that while output per loom was about the same in 1935 as in 1929, there was an increase in the number of looms per worker from 1.6 to 2.2. (The term worker here, of course, includes all operatives engaged in the weaving sheds, whatever their occupation). Output per worker has expanded from 36,100 yards to 49,500 yards. It would appear that the improvement in weaving occurred rather earlier

[1] From monthly reports of the Japan Cotton Spinners' Association.

than in spinning ; it began in 1925, it was very rapid between 1927 and 1931, and since that year it has continued at a lower rate. The main cause of the improvement has undoubtedly been the general adoption of automatic looms. Published figures seem greatly to under estimate the extent to which these have been brought into use in Japan. According to reliable information the bulk of the looms installed in the spinning-weaving mills are automatic, and in the large mills this type is almost universally employed, ordinary looms being used only for specialities. The Mitsubishi Economic Research Bureau goes so far as to say that the proportion of automatic looms to the total looms in the combined concerns is higher than the proportion of high draft rings to the total spindleage.

In the specialist weaving mills a very different situation exists. In these, which are after all responsible for the greater part of the output of piece goods, automatic looms are very seldom encountered, and in the chief branches not used at all. Reliable data are difficult to obtain for this section of the industry, but it would appear that there has been a considerable improvement during the last decade in output per worker, except in the very small mills that employ only hand looms. The rise in efficiency is most noticeable in the largest mills with fifty looms and over. The increase in output per worker is to be associated with the change in the equipment of these mills. Hand looms have almost disappeared from the medium and large mills ; narrow looms have greatly diminished in number ; and much new equipment in the form of wide looms has been installed. During the last three or four years economies have been effected in some branches of weaving as a result of the development of Kogyo Kumiai[1] among them. These associations provide joint equipment and services for their members, and in some places they have helped to reduce substantially the costs of subsidiary processes and of transport.

I have not referred specifically to the lowering of unit costs that has been effected throughout the industry as a result of the rise in the scale of operations since 1929 ; but, of course, considerable economies in the power and management charges

[1] This may be translated as "Manufacturers' Associations."

and in other overhead costs have been brought about as a direct consequence of the enlargement of plants. Further, I have had no time to touch upon the fall in average money-wages which was very steep during the years of depression and even continued during the early period of recovery. But possibly this matter may be brought up during the ensuing discussion.

G. C. ALLEN

TABLE A.

EQUIPMENT AND YARN PRODUCTION OF THE LARGE COMPANIES.

Firms	1929 (Second Half-Year) Ring Spindles (In Thousands)	Mule Spindles (In Thousands)	Doubling Spindles (In Thousands)	Yarn Output (In Thousand Bales)	1935 (Second Half-Year) Ring Spindles (In Thousands)	Mule Spindles (In Thousands)	Doubling Spindles (In Thousands)	Yarn Output (In Thousand Bales)
Dai Nippon	705	4	193	149·5	919	4	200	180·9
Toyobo	780	—	109	198·4	1,476	—	222	292·7
Godo	436	—	64	107·1				
Kanebo	633	—	93	119·2	928	—	111	143·4
	2,554	4	459	574·2	3,323	4	533	617·0
Kurashiki	279	—	22	61·2	500	—	43	88·8
Fiji Gasu	478	26	91	75·6	649	26	95	69·0
Nisshin	418	5	83	62·4	498	5	79	52·9
Total	3,759	35	655	773·4	4,970	35	750	827·7
* Proportion of Total Capacity and Output in hands of above firms ...	56%	—	81%	53%	48%	—	83%	48%

* Only firms that are members of the Japan Cotton Spinners' Association are taken into account. The "Outsiders" possessed in 1929 2·4 per cent. of all ring spindles in Japan and Korea ; in 1935 the proportion was 3 per cent.

TABLE B.

DISTRIBUTION OF RING SPINDLES ACCORDING TO SIZE OF FIRMS*.

Size of Firms	Percentage of Total Spindles 1929	1932	1935
Under 100,000 Spindles	30·0 (55 firms)	23·6 (51 firms)	14·4 (44 firms)
100,000-200,000 Spindles	7·7 (4 „)	16·8 (11 „)	21·5 (17 „)
Over 200,000 Spindles	62·3 (9 „)	(59·6)	64·1 (11 „)
("Big Six," together with Godo in 1929)	(55·5)	(50·6)	(47·2)

* All firms in Japan Proper are included.

TABLE C.

DISTRIBUTION OF RING SPINDLES ACCORDING TO SIZE OF MILLS*.

Size of Mills	1929 (Second Half-Year) Number of Mills	Ring Spindles (in Thousands)	Percentage of Total	1935 (Second Half-Year) Number of Mills	Ring Spindles (in Thousands)	Percentage of Total
Under 50,000 Spindles	144	3,524	52	115	3,390	33
50,000-75,000 Spindles	24	1,518	22	46	2,775	26
75,000-100,000 Spindles	13	1,198	18	21	1,812	17
Over 100,000 Spindles	4	532	8	21	2,552	24
Total	185	6,772	100	203	10,529	100

* All Mills in Japan Proper are included.

TABLE D.

SIZE OF PLANTS AND DISTRIBUTION OF EQUIPMENT IN THE SPECIALIST WEAVING INDUSTRY IN 1933.

Size of Weaving Sheds	Number of Looms in each Size Group			
	Total	Hand Looms	Narrow Power Looms	Wide Power Looms
1-9 Looms	63,000	54,000	4,000	5,000
10-49 Looms	85,000	4,000	35,000	46,000
50 Looms and over	129,000	1,000	44,000	83,000
Total	277,000	59,000	83,000	134,000

The Theory of Industrial Location[1]

A re-distribution of economic activity has been among the most important features of economic change in post-war Britain. The problems of localised unemployment in the depressed areas, as well as those which result from the rapid growth of new urban centres, are two obvious results of locational change. The position of the depressed areas is an urgent social problem, and as such has received considerable publicity and some attention from Government. Yet, apart from some small amount of *ad hoc* realistic study, the economist has contributed almost nothing either to the understanding of the issues involved or to the formulation of State policy. The problems of the more prosperous areas of the country belong to the future rather than to the present, and as such they receive almost no popular attention ; but they are present at least in embryo, and again the economist has little to contribute.

These are two of the more obvious matters. Even, however, when the less immediate issues are neglected and we turn to consider the relation of industrial location to the fundamental problem of the use of resources, it is again found that the field is largely unexplored. Apart from the question of dealing with the special problems of the moment, changes in industrial location must have consequences of some importance on economic efficiency. With such development of policy as has occurred in the treatment of the problems of the Special Areas, there has been some, though admittedly slight, State interference with the trends of location. There are possibilities, that, with the growing demand for State control of location this may become crystallised into a more definite policy. This method of solving current problems involves, however, effects which transcend the immediate future. In spite of this, it has not even been asked whether such re-orientation of an apparently deeply rooted trend is an appropriate direction of future development, as well as an appropriate policy for the problems of the moment.

[1] A further article dealing with other aspects of Industrial Location will be published in a later issue of *The Manchester School*.

It is somewhat surprising that there exist no adequate treatments of location, as any change in industrial structure (such, for example, as may result from changes in technique or in demand) implies some change in the grouping of the factors which determine location. The fact remains, however, that not only is there no comprehensive theory, but also very little knowledge of the relevant facts of industrial structure. In such conditions, attempts at State interference must necessarily be set in a framework of blundering empiricism.

The purpose of this article is to examine the most widely known treatment of location, and to show the nature of its shortcomings in analysis of present changes. Further, it is possible to suggest possible lines of approach to the problem; these must necessarily be tentative, in that it is only by actual use that the validity and usefulness of methods can be assessed.

Theories of location are of comparatively recent development. It is true that some aspects of the problem are comprehended in the "Copernican system" of the theory of value[1], but the first treatment of location as a specific feature dates from 1909, with the appearance of Weber's *Uber den Standort der Industrien*. Previous to this, a theory of location had been implicit in the theory of rent; indeed, in the case of von Thünen[2], this had been made explicitly a theory of the location of different types of agricultural production. On the whole, however, a specific treatment of location would have been foreign to the assumptions and methods of nineteenth century economic theory. The special case of international location, referred to as "territorial division of labour" by Torrens in 1808, was not neglected, but it was an exception, depending upon an immobility of productive factors. In the field of general economic theory, there was treatment of rent, applicable to land, to fisheries and coal mines, and even to personal abilities, but not to factors

[1] In Marshall, for instance, we find consideration of the "many various causes" which lead to the localisation of industries, this being part of the analysis of increasing returns, while the question again makes its appearance in the treatment of "situation rent." (Cf. *Principles*, 8th edition, p. 441.)

[2] *Der Isolierte Staat*, 1826.

of production in general, and classical theory does not recognise the need for a theory of location of which the rent analysis is one part.

At the same time, there was a fairly wide field of "realistic" analysis. Starting from the writers on industrial problems, such as Ure (1835), who mentions "cheap fuel, an abundant population, a commodious sea-port . . . (and) a previously organised emporium" as leading to the development of manufactures, the special case of localized industries became a familiar feature in economic writings. By the end of the nineteenth century, there were at least two specific attempts to analyse the factors determining location. Hall's monograph on localisation in the *Twelfth Census of the United States* (1900), analyses the details for fifteen highly localised industries, and finds seven factors which cause this localisation. As, however, it is impossible to assess the relative importance of these, while almost every cause is regarded as having been an important factor in the development of each of the industries studied, the results are not conclusive. A more ambitious treatment is found in an article, *The Location of Industries*, written by E. A. Ross in 1896,[1] and long regarded as the best work on the subject. After excluding non-rational, and "rational but personal" factors from the analysis, Ross considers those factors which are both "rational and economic." There are a number of these : the situation of raw materials, nearness to a market, the situation of an "auxiliary" material (such as coal for the provision of power), the presence of skilled labour, or of spare-time labour, differences in legislative conditions, such as the granting of subsidies or the imposition of taxes, or the presence of technical knowledge and invention, are all factors which may influence the location of production. All are illustrated by a wealth of examples of particular industries, some used several times over in order to show the importance of different factors.

In addition to this delineation of factors there are some suggestions about the process of development, and the genesis of localisation, which is regarded as a limiting case of the

[1] *Quarterly Journal of Economics*, 1896, p. 246 *et seq.*

process of industrial concentration. Concentration may "aid," "oppose," or be neutral to the forces of location. The first case occurs when a region which has some initial superiority over other areas for a particular industry attracts that industry, and so "acquires a momentum from the fact that the economies of concentrated industry now work in its favour as well as its special advantages." The forces of location may be opposed when, although with changing conditions a new location would be superior, the existing location has developed the advantages of specialised labour, facilities for using waste materials, and so on, and so created "a matrix that clasps and holds it (the industry) with much firmness." Finally, the matter is neutral in the special case of two centres expanding and squeezing out concerns in intervening territory—economic concentration having been attained, "the issue of the struggle will turn solely on the relative attractiveness of the rival localities."

It will be obvious that this "dynamic" analysis is faulty ; the separation of "factors of location" from the forces leading to industrial concentration is an initial error which makes it almost impossible to analyse the problem as a whole. Thus, for example, in the case of industrial concentration "opposing" the forces of location, the position becomes one of regarding the relative advantages of two areas after abstracting the factors due to industrial concentration, and declaring that one is superior to the other ; but as economies of concentration do in fact exist, it is not superior. Obviously these economies are compounded of the factors of location. The other method of approach adopted by Ross also has its weakness. A list of the factors which might be important together with examples in which they have in fact been important, but with no attempt to formulate them in any schematic arrangement in accordance with some set of general principles, is not a theory of location ; nor is it by any means an adequate descriptive study, and the impression created is one of almost complete inconclusiveness.[1]

[1] A large number of other writers about this time (as well as some others more recent) could be mentioned, all of whom use a semi-historical approach of this type ; indeed this type of treatment became fairly standardised, and there are many articles consisting of variations on the same theme.

The theoretical and deductive treatment of location is first found in Germany, where the reaction against the historical school was most marked. There are, however, no analyses of considerable importance until the beginning of the present century, with the work of Weber,[1] whose treatment is still largely regarded as generally authoritative, although it has been criticised in respect of some of its details, while there is sometimes an uneasy feeling that it may be inadequate in more than its details. Weber's analysis is presented as self-contained, and not as incidental to other theories—a contrast to his spiritual predecessor, von Thünen. Further, although he suggests the outlines of a "capitalistic" theory, Weber declares that he is concerned with the discovery of principles which apply to any type of economic system. In the attempts to discover such principles he excludes from consideration those locational factors, such as the perishable nature of a particular raw material, or the necessity of a certain type of water supply, which are of importance only in particular cases, and deals only with those "general" factors which will affect all industries under any conditions. These are classified into two groups—those which distribute industries regionally, and those which " 'agglomerate' or 'deglomerate' industries within the regional distribution." The former will determine the geographical pattern of industry, creating "a fundamental framework of industrial locations," while the latter will determine the degree of dispersion within that framework :

"If industry is influenced by the cost of transportation or by geographical differences in the cost of labour, industry is drawn to points geographically quite definite, though changing their position as industry develops. The factors which operate thus are regional factors of location. If industry, however, is brought together at certain points by price reductions due to agglomeration itself, whether it be the more economical use of machinery or merely the advantage of being at a place where auxiliary trades are located ; or if industry is driven from such

[1] *Uber den Standort der Industrien*, 1909. Also English edition, translated by C. J. Friedrich, *Alfred Weber's Theory of Location of Industries*, Chicago, 1929. References are to the English edition.

congested places by the high rent ; industry is agglomerated or spread within its geographical network according to certain rules which are quite independent of geography. The factors which operate thus are agglomerative or deglomerative factors."[1]

These latter are not dealt with at so great length as the "regional" factors ; they are in fact, almost appendages which are not assimilated to the main theory. They are reduced to a single force, "invariably derived" from the inter-action of the two opposing forces and resulting in the creation of "a certain number of agglomerations of a certain size." When this is dealt with in detail, there are analysed a large number of possible cases, all based on the idea of "the function of economy" of an industry, which is "composed of individual indices of economy (per unit of product) which correspond to each stage of concentration." A formula of agglomeration is worked out, and it is shown that "industries with high coefficient of manufacture (*i.e.*, 'value added through manufacture') show strong tendencies to agglomerate ; industries with low coefficient of manufacture show weak tendencies to agglomerate ; and these tendencies are inherent in their nature." This is probably quite true ; and it is essential that a theory of location should take into account such facts. It cannot be claimed, however, that this treatment is of great value. An attempt to apply it to the problems which are raised in even the superficial study of an existing pattern of concentration and dispersion shows that many features are left untouched.[2]

It is, however, the "regional" factors which receive the most attention and which, indeed, form the theory. After classifying the items of cost which are incurred in the process of production, and eliminating those which are not affected by an industry changing its location, those which do influence location are found to be three, namely, the "relative price range

[1] *Op. cit.* p.21.

[2] It is, in fact, this part of the theory which has been most subject to criticism. "Agglomeration" is not in fact a simple concept, but covers a large variety of factors. Many of these have been noted ; one important feature which appears to have been overlooked, however, is that it does not distinguish between the growth of a firm and the growth of a localised industry. These may, of course, coincide over part of the analysis, but this is not always true.

of deposits of materials, the costs of labour and transportation." The first of these can, however, be comprehended in the third; "dear" deposits of materials are considered as being far removed, and "cheap" deposits as near at hand. A number of simplifying assumptions are a necessary preliminary to the method used to work out the operation of these factors. The geographical distribution of materials is taken as given; fixed centres of consumption are also assumed, while mobility of labour is excluded, so that there are fixed "labour locations."

With these assumptions it is a comparatively simple matter to work out as a first stage the "transport orientation" (*Transportorienturung*) of an industry, although Weber does this with a great deal of elaboration. It is obvious that an industry will be attracted to the point which has the lowest transport costs; the question is one of determining which are these points. This is attacked by considering transport costs in terms of the weight carried and the distance covered. This is used also to cover any variations in rates charged for transport services; although this involves some difficulties, these are regarded as slight, and it is concluded that it is "quite admissible to work with weight and distance in theory as well as in practice."[1] The method used is to draw "locational figures," formed "by the place of consumption and the most advantageous material deposits." A product requiring two materials not found in the same place will, for instance, have a figure of a triangle, one material deposit at each of two corners and the point of consumption at the third. As it is in these figures that "the outstanding elements of the structure of orientation are laid bare," they form the chief tool in the formulation of the theory, which, indeed, largely consists of a large collection of such locational figures.

The point within the locational figure at which production will be situated is the point of minimum "ton-miles," and this is determined by certain relations, as follows :—

"The entire weight of the materials to be used in the production must be moved to this location from the material

[1] *Op. cit.* p. 47. Weber has already decided that railway companies base their rate-fixing policies on such principles.

deposits ; and the weight of the product must be moved away from this location to the place of consumption. This means that this location is connected with the 'corners' of the locational figures by lines along which move the weights which appertain to these corners . . . Along the lines—let us call them 'components'—of the material deposits run the respective material weights, and along the component of the place of consumption runs the weight of the product . . . These weights represent the force with which the corners of the locational figures draw the location toward themselves."[1] It thus follows that "the location will be near the individual corners or far from them according to the relative weight of their locational components."

Materials, however, are of two kinds, "ubiquities" and "localised." The former, being found everywhere, are obviously of no consequence for a theory of location. Localised materials are stated to be of importance in attracting industries according to the degree in which they lose weight in the process of manufacture ; "gross," or "weight-losing," materials will attract industry, but "pure" materials, entering into the product without loss of weight, cannot pull an industry towards their situation. The concept of the "material index" is introduced, and this consists of the ratio of the weight of localised material to the weight of the product, and this added to the weight of product is the total weight to be moved, or the "locational weight."[2] For weight-losing materials to pull an industry towards themselves, it is found that "it is necessary that the material index which they co-determine be greater than one, and that their portion of the material index be equal to that of the remainder plus the weight of the product."[3]

[1] *Op. cit.* pp. 53-54.

[2] Thus the locational weight has the minimum value of 1 (weight of product) when only "*ubiquities*" are used, so that the material index is zero.

[3] A distinction between weight-losing and pure materials have previously been made by other writers, (*e.g.*, Ross, *op. cit.*), and is still commonly accepted. A little reflection, however, will show that, although at first it seems compatible with common-sense, it is fallacious. The total weight of material used must be moved to the place of production, and whether or not it loses weight in the productive process is totally irrelevant. A simple example will serve to make this clear. If a product is composed of two materials, one entirely "gross" and the other "pure," and equal quantities of each are used, then whether

This is the essence of the theory so far as it is concerned with transport costs. These concepts are used to analyse a large number of cases, an attempt to exhaust all the possible types of combination of the factors considered. This is simply application of the methods, and adds nothing of fundamental importance. Possible variations in transportation systems are considered but again nothing of basic importance is added.

The second "regional" factor is labour cost, and this, of course, operates only where there are variations between different places. In order to show that such variations do exist, a few examples of wage rates in different districts of Germany are given. The laws of labour orientation are then worked out. The basis is the concept of the situation of an industry at a favourable labour location being regarded as a deviation from the point of minimum transport costs, and this, of course, will be the case only when the saving in labour costs is greater than the addition to transport costs. In order to determine when this is so, Weber uses a technique of "isodapanes," *i.e.*, curves of equal deviation costs from the point of minimum transport costs, usually in the form of concentric rings around that point:—"For every labour location, wherever situated, there must be an isodapane of the respective location figure. This isodapane indicates how high the costs of deviating the industry from the minimum points of transport costs of the locational figure to the labour location in question would be."

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production is situated at the source of one material or the other the same transport costs (ton-miles) will be involved. The real point is that usually in practice a greater bulk of weight-losing material is required than of a pure material. The best example is, of course, coal, and it was probably this case which led to the faulty generalisation that it attracted industry *because* it was weight-losing. In fact, however, when developing a technique to deal with this point, Weber does analyse the true factor and not the erroneous one, though apparently without realising that this is the case. Thus, after developing the proposition quoted above with reference to the "material index" and "locational weight," he declares that, "stated more simply," the proposition is that the weight of weight-losing materials must be equal to or greater than the weight of the product plus the weight of the rest of the localised materials. In other words, the distinction between "weight-losing" and "pure" materials is here unnecessary and is, indeed, meaningless. The distinction, however, has some validity in considering the relative attractions of consuming centres and situations of materials as points of location.

Thus, if a labour location lies on a lower isodapane than the location determined by minimum transport costs, its economies exceed the deviation costs, while if it lies on a higher one, the reverse is the case. The "critical" isodapane is that on which the two are equal; hence a labour location which lies within this isodapane will attract an industry, while one which is outside will not.

Further analysis is devoted to examining the conditions under which labour deviation will occur. Where labour costs are an important element it is obvious that the attracting power of labour locations will be greater than in the case where such costs are unimportant; in Weberian terms, with "large potential indices of economy of the labour locations" there will be "correspondingly high critical isodapanes; there we shall find a high potential attracting power of labour locations." Locational weight is also important, in that it influences the distance between and the form of the isodapanes; where for instance, it is low, these will be widely spaced and the industry may be very greatly deviated. The matter is made more precise by the introduction of the "coefficient of labour," which is "the amount of labour costs connected with locational weight."

The treatment of agglomeration and deglomeration is then related to these conclusions, mainly by the use of such devices as considering their effects on the isodapanes. Little is added to the main analysis, however. This is also the case in a final chapter on the place of manufacturing industry in the economic system, an attempt to relate the theory to the location of industrial activity in general.

Weber's theory has been considered at length as being the most precise and definite theory which has yet been formulated, while it has obtained ready acceptance in many quarters and been, in some cases, exalted to a position of almost unquestioned dogma. It has, it is true, been subjected to some criticism, but this has been chiefly limited to criticism of details.[1] There are, however, directions in which it can be criticised which

[1] *E.g.*, it has been shown that at some points Weber compares quantities which are not homogeneous, and so non-comparable, while Roscher advanced the view that the theory was not "general" but "capitalistic."

involve more than the consideration of details. The most obvious fact which has emerged from work on location since the appearance of the Weberian theory, is that it has not yielded any substantial assistance in the analysis of locational problems. Although a deductive theory, necessarily based on limited assumptions, cannot comprehend all the possible cases and variations which may occur in the real world, at least it should offer some points of departure for dealing with most. Whenever an attempt has been made to utilize the theory for the study of particular problems, however, it has been found that most of the essential elements have had to be discarded. Weber himself had hoped to analyse the locational factors in various German industries in the period after 1860, but has never fulfilled this aim. Some of the work was, however, undertaken by his pupils; the results are usually little more than a series of empirical generalisations about the factors which are important for the particular industry studied. The location of the chemical industry[1], for instance, is found to be, not a question of locational weights and labour coefficients, but one of such elements as the need for a large space, or a good water supply, while an historical study is an important part of the treatment. A further example is found in a study of the shoe manufacturing industry of the United States, not by one of Weber's pupils, but by a disciple.[2] After having worked out various locational weights on the basis of conditions existing in 1927, this writer goes on to discuss several additional factors, which would be included in the Weberian analysis only by straining the meaning which it is intended to have. Further, he gives an historical survey, divided into four periods, in each of which a different locational factor was the main determinant. The net result is that not only are the additional factors more important than the "general" factors which are regarded by Weber as the only elements which need be considered, but their relative importance changes as conditions change. Such, however, is the influence

[1] Carl Christiensen, *Chemische u. Farben Industrie*, in *Uber den Standort der Industrien II Teil, Heft.2*, 1914.

[2] E. M. Hoover, *The Location of the Shoe Manufacturing Industry in the United States*, in *Quarterly Journal of Economics*, 1933, p.254 *et seq.*

of Weber that it is still declared that the theory can explain the greater part of the forces determining the location of this industry ; all that is admitted is that some "qualifications" may be useful.

Again, the theory offers no help in attempting to explain such developments as the general shift in the location of industry which is occurring in this country at the present time. Here the nebulous generalisations of the compilers of catalogues of locational factors offer more assistance to the investigator.

It is true that Weber admitted that, for every industry and every special case, there would be peculiar features which would have to be studied directly as a complement to his formulation of general principles. Thus, even though his theory should fail almost completely as a tool, it might still have some value as a "general" explanation. The essence of his claim is, in fact, that, starting from "very simple" premises, he deduces "the entire system of 'pure' rules of location." Thus there arises the question whether there can be any such "pure" rules of location. It is, of course, possible to make assumptions and to build on them a logical structure which will yield a set of rules which can be regarded as rules of location. The validity of these depends, however, upon the degree of relevance of the assumptions to the real world. It may be possible that the rules so formulated will be another empty economic box, of the type which it is singularly easy to construct and the value of which is an adequate reward for the labour expended. It may be said at once that Weber's assumptions are arbitrary ; that he does not give an analysis which explains a great deal of the real world ; that, even if his theory be only a first approximation, it does not approximate at all closely to much that it is supposed to explain.

There is at the outset an arbitrary assumption, in that, although a general theory of location is supposed to be valid for any type of economic system, the first step is to select certain factors as the only factors which need be considered ; Weber declares that the factors which he does select (transport, labour, and "agglomeration" and "deglomeration") are of predominating importance, that all others are such as a general theory of location

"may properly ignore." It is important that no evidence is forthcoming to prove this—unless a few isolated facts about variations in wage-rates can be regarded as evidence. This would be a grave fault even if Weber were studying the problems connected with one particular type of industry ; for even then a preliminary inductive analysis would be necessary. When, however, he claims to comprehend all cases in a deductive analysis, the position is even worse ; for there are no logical differences between the factors which he does select and those which are rejected. His selection is quite arbitrary. As Predöhl has pointed out, it would be possible (and, it can be added, necessary if Weber's theory were to be "complete") to call climate a "general" factor and to apply to it the same technique of isodapanes as is done in the case of labour. It is here that the theory becomes almost useless as a tool, for before it can be used in a particular case, that case must be analysed in order to discover whether the factors selected by Weber are in fact important. The theory would thus emerge and would not be a preliminary explanation. Viewed as a general explanation there are parallel drawbacks, as it is simply the precise formulation of specific cases.

There is a second serious limitation, which develops in analysing the *modus operandi* of the chosen locational forces. This is the removal of the analysis from the world of costs and prices which is the economists' field to one of technical co-efficients. One of the first steps is to reduce all transport factors to weight and distance ; the process of general economic theory is reversed, and instead of dealing with the factors in terms of prices, where price elements exist even these are reduced to terms of technical coefficients. The labour factor similarly is analysed with reference to the technical reasons for industry being "diverted" to labour locations.[1] Not only does this substitution of a theory of technical factors for a price theory involve the exclusion of a large number of cases, but also it must to some extent vitiate the whole theory as an attempt

[1] Differences in wages, and therefore of labour costs, are also envisaged ; but these are merged in the general analysis and calculated in "ton-miles."

to explain location in any existing economic system.[1] A theory of technical coefficients may be a useful guide for making a plan for a controlled economy setting out to create an entirely new industrial system under conditions of technical stability, but for a developed economic system in which price and cost variations are important elements as continuous reactions to changes in a multiplicity of conditions, not all of which are technical, this aspect of the theory greatly reduces its scope. Not only does it mean that the theory is incomplete in certain essential aspects, but it also involves cumbersome, and unnecessary, complications. In the analysis of "labour deviations," for instance, the saving in labour costs must be measured in ton-miles and balanced against an increase in transport costs, again equivalent to so many ton-miles. There seems to be some confusion on the part of Weber himself at points such as this ; constantly using the idea of points of minimum transport *costs*, it is easy to forget that this means ton-miles.

There is a third limitation of the theory in the peculiarly abstract assumption that there are fixed "labour locations." It may generally be true that the individual firm can decide on a situation on the basis of a given distribution of labour ; but for industry as a whole it is obvious that location is a cause of the distribution of labour as well as an effect, that changes in location will lead to changes in the distribution of labour. Any theory of location which does not take this into account is *ipso facto* incomplete. This assumption of immobility of labour would, of course, be valid if it were simply used as a first stage in analysis, to be removed after the elucidation of the particular points at issue. Weber, however, presents it as a part of his completed analysis, and it must not be forgotten that it was this analysis which was projected into the real world by his disciples as a basis for the control of industrial location.[2]

[1] This difficulty would disappear if all cost and price differences could be reduced to the measures used by Weber ; but there is nothing to suggest that they can, especially if the analysis is taken beyond the field of transport costs.

[2] One writer, for instance, found by means of Weber's theory that the iron industry of upper Silesia was wrongly situated and should forthwith be moved to the Breslau district. It is not known whether one of Weber's mechanical models was found of value in reaching this particular conclusion.

Finally, there is great deal of unwarranted simplification in the concepts of "agglomeration" and "deglomeration." It is, indeed, this part of the theory which has been most subject to attack. These concepts conceal a confused variety of factors which cannot, in fact, be so grouped, and the whole of this part of the theory is far from satisfactory.

On the whole, then, it cannot be said that Weber presents a coherent or consistent theory. A most cursory examination of the facts shows that differences in transport or labour costs, and the elements comprised in industrial concentration or dispersion, are factors which will be of importance in determining location. Weber simply works out a large number of cases in which the varying influences of these factors are considered under a certain set of assumptions. The result is not the presentation of a complete theory, but simply the elaboration of these assumptions. When they are examined, it is seen that Weber is in fact explaining, not the "pure" rules of location, but the chief technical factors which influence the location of the individual plant in a particular type of industry, namely the heavy industries of the ninteenth century.

In spite of these imperfections, the theory has received widespread acceptance, a fact which has probably been of prime importance in delaying the emergence of a less imperfect theory. The almost complete sterility which has resulted from this acceptance of Weber's theory with insufficient recognition of the unreal character of the assumptions, is well illustrated by the article on location in the *Encyclopaedia of the Social Sciences* (1929), in which the formal analysis of Weber is combined with a great deal of vague semi-historical generalisation. After declaring that Weber's treatment and subsequent discussion have "helped to clarify the outlines of a new and unified theory, in which there is no longer a distinction between the 'pure' and the 'realistic,' " the writer proceeds to set down some details of numerous factors which can influence location, presenting a collection of material in which the locational weights and labour coefficients of Weber rub shoulders with the historical categories of the German school, the climatic forces of List, the desire for "tractable" labour of the average entrepreneur, and the "arbitrary

choices" which "override the cold logic of strictly economic calculus" of the theorist. No synthesis of any kind is attempted, and the only conclusion which can emerge is that location must be indeterminate—and even this is implicit and not explicit.

The treatment developed by Professor Ohlin,[1] who admittedly follows Weber in some major points, is of a different kind. The analysis of location is here undertaken as part of a general theory of trade, and is related to the main body of doctrine which is expounded. Starting with a case similar to that of Thünen, Ohlin proceeds to the more complex case of the separation of the situations of raw material production and manufacture. The solution is along purely Weberian lines, with the familiar locational figures. Similar additional cases result in the statement that the localisation of the later stages of production is "*governed by the relative transportability of commodities and the distance relations of different places with regard to raw material supply and markets.*"[2] The next step is to consider the factors governing the location of raw material production, and to show how this is an element which inter-acts with the location of manufacturing, but the method used does not change. The location of consumers' markets is then treated and shown to be governed largely by that distribution of productive factors which is the outcome of a given pattern of industrial location. Local differences in transport facilities are an important factor, and one which was largely ignored by Weber ; Ohlin offers a number of pregnant suggestions as to their influence, and leads up to the general principle that "*localisation of industry depends upon the transport relations of each place and product with regard to natural resources and upon the distribution of consumers' markets.*"[3]

This conclusion is, of course, similar to the Weberian formulations, and up to this point, Ohlin, like Weber, has been

[1] *Inter-regional and International Trade*, Harvard, 1933. Chapters X—XII. Throughout Ohlin speaks of "localisation," which is to be expected in view of the scope of his work ; it is here transcribed as "location," as he is in fact dealing with the general, and not the special, case.

[2] *Op cit.* p. 190 ; italicised in original.

[3] *Op. cit.* p. 200 ; italicised in original.

assuming a given distribution of resources ; but it is obvious that the factors which determine this distribution must be analysed if circular reasoning is to be avoided. Ohlin first deals at some length with the effect of differences in wages on location, with numerous illustrations, and gives some suggestions on such themes as the location of cities, and the causes of dense populations, and then deals more briefly with the effects of local differences in the supply of capital. Recognising, however, that the distribution of productive factors cannot be regarded as "known data," that it is "to some extent as much the effect of as the cause of localisation," he discusses some of the factors which determine this distribution. The chief element is the existence of a certain cost structure which comprehends sufficient difference between localities for there to be trade between them. If this structure changes, for instance, as a result of changes in transport costs for some commodities, then the prices of factors will change, and if factors are mobile, their distribution may change. In general, "any change in the price system can, by changing factor prices, bring about factor movements." At any given time, the distribution of factors will be a function of three elements, namely, the distribution at an earlier time, the changes in the domestic supply (as by births and deaths in the case of labour), and inter-regional movements of the type indicated. A concrete description would, of course, involve special investigation, which Ohlin does not undertake.[1]

Even this brief statement is adequate to show a more satisfactory treatment than that of Weber ; the mere recognition of the importance of analysing the distribution of factors is of itself a great advance. It cannot, however, be claimed that there is presented a perfectly satisfactory theory ; there is not a true synthesis of the various elements, and the review of location according to the analysis given leaves a great deal unexplained. When there are examples to illustrate the influence of the various elements, there is a return to the "cata-

[1] He deals, however, with many points relating to the application of this analysis, and many of his suggestions are of value. He also deals, though more briefly, with the economies of concentration and the "arbitrary" elements in location.

logue" method of the historians,[1] in which one industry can be used several times over to illustrate the dominant importance of different factors.

There have been other attempts to formulate a theory. Engländer,[2] for instance, approaches the matter from the point of view of various cost and price structures, the different levels of which at various places have different determinants as regards location. His work is, however, extremely abstract and abounds with large numbers of possible cases, each with its appropriate geometrical figure, and there is no comprehensive general theory. Probably the most satisfactory attempt is that of Predöhl. Cassel[3] points out that the substitution of one factor of production for another is often limited by a process of industrial concentration, so that location would be one aspect of a study of the distribution of the means of production according to the principle of substitution. Predöhl[4] works this out in greater detail. Starting from the idea that "if the problem of location is an important economic problem and if the systematic theories are sound, these theories must be applicable to the problems of location ; they must contain the undeveloped principles of location,"[5] he outlines a general theory which is at least free from the major strictures which can be passed on Weber's analysis.

He assumes that a process of production moves without any changes in the quality or quantity of the output. Then the consequent changes can be expressed in terms of changes in three groups of means of production. First, the land used changes in quality and situation, both of which items can be reduced to changes in the amount of "units" of land. Secondly, "all other natural and cultural conditions may change, requiring a different quantity or quality of capital and labour," and these changes can be expressed as changes in the amount of units of

[1] See *op. cit.* p. 207 *et seq.*

[2] Article on *Standort der Industrien* in *Handwörterbuch der Staatswissenschaften*. 4th edition.

[3] *The Theory of Social Economy* (1930 edition), vol I. p. 104 *et seq.*

[4] *The Theory of Location in its relation to General Economics*, in *Journal of Political Economy*, 1928, pp. 371—390.

[5] *Ibid.* p. 379.

these factors. Thirdly, there may be changes in the quality and quantity of transport used, these again being regarded as changing the amount of units of the factor utilised. These changes are, it is emphasised, all the possible changes that can occur. Moreover, they are general, and not selected, so that every economic process can be completely analysed in this manner.

The problem of location can now be conceived of as being the combining of these means of production so as to yield a desired result—a variation of a problem familiar in economics. Several approaches are possible, but Predöhl uses "the simplest solution possible," and applies the principle of substitution. Each factor is applied so that at the margin its cost is equal to the price of the resultant additional product. It is easy to see how this can be applied in the case of an industrial process changing its location ; thus, "changing a location . . . means substituting either units of use of land for units of use of all other means of production, or *vice versa*. The proper ratio of these groups will be determined by the point of indifference as being the point of lowest cost." Similarly, points of indifference between the substitution of capital and labour for transport or *vice versa* would be worked out. The problem is thus one which is susceptible to the familiar treatment of indifference curves.

Certain simplifying assumptions have necessarily to be made, and although the assertion that these do no violence to the main theory can usually be accepted, the theory needs some qualification in consequence. The theory is, however, purely deductive and is "complete" in a sense in which the theory of Weber is not, while it is also economic rather than technical, although there is room for technical considerations. It must, however, as Predöhl admits, be "confined to mere formality," and "mere formulas of substitution" are not of great value. "The principle of substitution adjusts the ratio of interchangeable groups of factors of production in terms of points of indifference, but it does not explain what amounts—and *why* precisely these amounts—are interchangeable." Consequently, when it is brought into contact with the real world, its sharp precision is lost ; every case has its special features which must

supplement—but only supplement—the principle of substitution. By setting aside formal completeness it is claimed, however, that it is possible to arrive at various generalisations subordinate to the "superior determinative" of the principle of substitution, to show empirically that one group of productive factors is, in a particular case, especially significant. For instance, "iron industry usually goes to the sources of coal rather than to the sources of iron."[1]

Thus, in spite of its formal precision, and in spite of its possibilities, with the application of modern refinements, of being a happy play-ground for the exercise of analytical ingenuity, the theory does not explain a great deal. It cannot be regarded as an adequate explanation of any existing pattern of location, while its uses as a tool in analysing the causes of locational changes are strictly limited. Again, there appears the need for inductive study as a means of making generalisations which the theory can only arrive at after a laborious process and which, when reached, in any case must be checked by induction.

A review of the various theories of location shows quite clearly the lack of any concepts which can be used in dealing with actual problems. The reason for this is that all theories have attempted to explain too much. Weber, for instance, sets out to give a general theory applicable to all "industry"—a category which from the start makes his aim almost impossible of fulfilment. In point of fact he explains some factors relating to certain heavy industries (which industries in particular cannot, of course, be stated). It never seems to have occurred to any writer, apart from the historians, who did it unconsciously, to deal with industries rather than with "industry" as a category. This is in spite of such facts as that Weber implicitly classifies industries according to the nature of their raw materials. In dealing with such a diversity of features, a precise formulation which attempts to cover the whole ground must defeat its own objective; for the more precise it is, the more formal and of more limited application must it become. Setting out to

[1] This is an unfortunate example, as the statement, although true in the nineteenth century, is the reverse of the truth to-day. Obviously, however, the principle used is applicable to both cases.

explain in precise terms the "general" structure of location, the theories reviewed finish by explaining very little indeed. If an attempt is made to bring such theory more into contact with reality by the addition of empirical generalisations or a little factual embroidery, then the result becomes the indeterminate confusion which marks so much of the work in this field.

Because of this, however, it must not be concluded that it is impossible to explain anything relating to location in general terms. It is essential to avoid having recourse to a catalogue of factors, each of which may or may not be important in various cases, the result again being an impression of almost complete confusion—an impression which does not belie reality. Some general basis to which to refer special problems is essential if location is to be considered as part of the general economic process. Remembering that the more precise and detailed such a formulation is the less will be its value as a tool, while in any case of itself it will explain but little of any particular problem, it does not seem an impossible task to find some general principles which can be used as analytical tools even if, of themselves, they do not explain a great deal. It is, of course, essential that such principles should form part of a more complete analysis ; otherwise they would be meaningless.[1]

An essential condition is that it should be stated at the outset what it is that is being analysed. Neglect of this has caused considerable confusion in theories of location, as well as in other matters. There is, for instance, the frequent confusion between the analysis of the working of a number of factors under given conditions, including movements towards equilibrium following changes in those conditions, and analysis of changes, including elements of "creative emergence," in the system which embraces the factors studied.[2] The result of this confusion is well illustrated in the apparent conflict between those who offer historical and those who offer deductive explanations of location. The truth is that each group is analysing different

[1] The Weberian theory, for instance, although of limited application, would have its place in a theory which was truly comprehensive.

[2] Cf. F. H. Knight, *Risk, Uncertainty, and Profit* (1933 edition), p. xix.

problems ; one side is describing the development of a system, declared by Marshall to be a vertebrate organism, at times mistakenly implying that from this can be derived an equilibrium analysis, while the other is attempting to construct a system of dynamics, of "pure" rules, but also making it serve as an explanation of a sum total of changes, which are in reality "biological," and which cannot be explained in those terms. Although there are elements which are common to both an equilibrium analysis and a study of change, there are also differences, so that all problems will not yield to the same treatment. An equilibrium analysis would take the form of showing that differences in location involve differences in cost. This was, indeed, the fundamental point for Marshall ; there is the passage in the *Principles* :

"If in any industry, whether agricultural or not, two producers have equal facilities in all respects, except that one has a more convenient situation than the other, and can buy or sell in the same markets with less cost of carriage, the differential advantage which his situation gives him is the aggregate of the excess charges for cost of carriage to which his rival is put. And we may suppose that other advantages of situation, such for instance as nearness to a labour market especially adapted to his trade, can be translated in like manner into money values. When this is done, and all are added together we have the money value of the advantages of situation which the first business has over the second : and this becomes its special *situation value*, if the second has no situation value and its site is reckoned merely at agricultural value."[1] It is not difficult to see how this can be comprehended in the system. It involves an extension of the concept of rent into the whole field of economic activity, and although this cannot be regarded as a final solution, in that economic theory cannot yet present a final analysis of the questions involved in the fundamental concept, it does not make problems of location different in kind from those of the rest of economic theory. Further it is possible to introduce some degree of definiteness, in that the length of the long period

[1] p. 441. It should be noted that this is the reverse of the method used by Weber.

from the point of view of location is the length of the amortisation period.[1] From this point, problems of location could be worked out under varying assumptions, *e.g.*, under conditions of perfect competition or of monopoly. Differences in locational advantages are important as factors causing imperfect competition, and here the matter can again be analysed in equilibrium terms. In short, the analysis of location could be assimilated to a theory of value, and there seems to be no ground for having a special theory.

When, however, it is desired to understand changes in locational patterns, further steps are necessary. It is true that some changes could be analysed in the terms given, but it is to be doubted whether these would be adequate to throw light on all the questions involved. The best example is found in the present changing pattern of location in this country. Again the start must be made from the basis of cost. Changes in location can be comprehended in changes in cost structures ; although there will be some elements in location which cannot readily be reduced to terms of cost, changes in industrial structure lead to changes in location because of changes in the relative positions of different locations with respect to the costs associated with them. For any plant about to be established, with a given output and conditions of technique, there are many possibilities of situation. Each situation has, however, its own particular cost for the output, and the costs for each situation differ from those associated with the others. It is thus possible to conceive of the various possible locations as being arranged in a scale according to the level of cost per unit of output associated with each.[2] It should be noted that all costs are included ; there is no selection of particular types of cost which are likely to be of most importance. Almost every element of cost can vary with a change in location, and any attempt to limit this feature to a few important factors immediately imposes unnecessary limitations upon the analysis.

[1] There are some qualifications to this ; but the main point stands.

[2] There are, of course, various qualifications to be made, and also some elements of ambiguity to be overcome. None of these, however, are such as to make the general approach invalid. Only the essential features are indicated here.

It is, of course, necessary to assess the relative importance of locational factors in determining the situation of a plant or an industry. This can be done in the simplest way by judging a factor to be important in accordance with the proportion of the cost it involves to the total cost of the product. If, for instance, it is found that in an industry the cost of transport of raw materials is a very small proportion of total costs, nearness to raw materials will be a less important factor in determining location than it will be in another industry in which this particular cost forms a larger proportion of total costs. Further, if it be found that industry as a whole is changing so that transport costs are becoming a less proportion of total costs than was formerly the case, then this factor of nearness to raw materials will, *ceteris paribus*, be weakened.

Changes in location such as those occurring at the present time result from more general changes in industrial structure. The analysis can thus be conducted in terms of the changing importance of the various factors of location, viewed in terms of their importance of cost. Similarly, changes in the location of a particular industry (though these are much less frequent than is often imagined) can be studied in the effects of the initiating changes of technique, demand, etc., on the cost structure. In recent discussion of location, emphasis has frequently been laid upon intangible and "psychological" elements. These do involve some difficulty, but not of an insuperable character, for again the question can be analysed on the lines given, if there be introduced a concept of an "ideal" location from which the actual situation may deviate because of such factors or because of imperfect knowledge. Further, a concept of an optimum pattern of location provides a tool for analysing the more general effects of change. All these matters are, of course, far from simple ; they involve considerable complexity, and there are many features of difficulty, some of which will be discussed in a further article. Their use, however, in studying recent trends has shown that they do provide a means of understanding change which is not offered by any of the methods discussed previously. It must, however, be emphasised that they are useless without considerable knowledge of

the character of the changes which are in process. This can be gained only by intensive study, by the collection of data relating to particular industries and individual firms. General analysis of the changes can give some indications of their character, but it can proceed only a limited way, and beyond that more particular investigation is essential. Unfortunately it is precisely this which is most lacking.

S. R. Dennison

Changes in British Import Trade, 1924-36

I.

THE volume of imports retained for home consumption in the United Kingdom in 1936 was 16 per cent. greater than in 1924 and even greater than in 1929, when retained imports were the highest for any year since the war until 1936. This increase of imports contrasts with the incomplete recovery in the export trade—still 25 per cent. less in volume than in 1929—and this disparity provides perhaps the main explanation of the adverse balance of payments in 1936.

The prospects of a further improvement in the export trade, of an increase in income from overseas investments and of the continuance of the present terms of trade, by which a less amount of exports than in 1929 or 1924 is required to pay for the same amount of imports, may mean that this adverse balance of payments need not at present be treated too seriously. The increase in imports has no doubt been kept in check by the tariffs and quotas imposed since 1932, and the present rise reflects mainly the improvement in the economic activity in the United Kingdom during recent years—more particularly in those industries supplying the home market.

INDEX NUMBERS OF PRODUCTION, RETAINED IMPORTS AND EXPORTS OF THE UNITED KINGDOM, 1924-36.

TABLE I.

Year	London and Cambridge Annual Index of Production	Volume of Retained Imports	Volume of Exports
1924	100	100	100
1930	106	113	87
1935	126	108	78
1936	134-139[1]	116	79

[1] Estimated.

This paper attempts to show the changes which have taken place in the import trade since 1924. Tariffs and quotas may be expected to have caused some alteration in the character of the import trade, and an attempt has been made to measure the

changes in quantities and prices of retained imports of goods ready for consumption and of imported raw materials for use by industry and agriculture during recent years. Comparison of the movements of production, retained imports and exports shown in Table I. suggests that the relative importance of the import trade has not shown any marked change during recent years, although it is probably less now than before 1930. In a later part of the paper we give estimates of the changes in the proportion of retained imports to total national production.

II.

Class II. of the official returns of imports into the United Kingdom includes those commodities which are recognised in the returns as specifically "raw materials and articles mainly unmanufactured." The total value of the commodities included in this class is, however, only about half of the imports used in industry, agriculture, forestry and fisheries. In addition, certain items in Class I. must be included, such as grain and unmanufactured tobacco, and also iron and steel bars and textile yarns entered as "manufactures" in Class III. Thus, only £323 million and £213 million out of approximately £690 million and £462 million of materials imported in 1924 and 1936 appeared in the official returns as "raw materials and articles mainly unmanufactured."

Retained imports have been divided in Table II. into materials for use by industry and agriculture and into goods ready for consumption. Materials for use by industry and agriculture have been defined in the same way as for the Census of Production. They thus include raw materials, partly manufactured goods and food, drink and tobacco, which undergo manufacturing processes or are used in agriculture, and include also a proportion of imported fuel and oil, packing and workshop materials, machinery parts and materials used in repair and maintenance work. The bulk of imports of food, drink and tobacco, machinery and items not included above have been assumed to be imported as ready for consumption, even though some may be treated after importation by wholesale or retail traders before sale to final consumers.

Most of the articles shown in detail in the Annual Statements of Trade could readily be placed in one of these two categories, but for a number of items in Classes I. and III. more or less arbitrary decisions had to be made involving even apportioning a few commodities in part to each class. Such difficulties were encountered principally in connection with edible oils and fats, textile goods and petrol, but they arose also owing to changes in the official classification of imports since 1924. Moreover, imports are now probably classified more correctly in the official returns than they were before 1932 since the imposition of import duties has made this more necessary. It is, however, impossible to say how far the comparability of the import returns has been affected on this account. The figures given in Table II. cannot, therefore, be taken as exact totals and they are only the means of the estimates made. Detailed examination of the import returns suggests the range of error in the total of retained imports for use by industry and agriculture and the total of goods imported ready for consumption is likely to be about £15 millions on either side of the figures shown. For 1936 the error may be greater, since the estimates were prepared by using the December Monthly Trade and Navigation Accounts.

DISTRIBUTION OF RETAINED IMPORTS IN 1924-36.
(Only means of estimates are shown).

TABLE II. £ million.

Year	Total Retained Imports	For Industry and Agriculture			Ready for Consumption			
		Total	Food, Drink and Tobacco	Other Materials	Total	Food, Drink and Tobacco	Machinery	Other Goods
1924	1,137	690	201	489	447	341	9	97
1927	1,095	645	181	464	451	331	14	106
1928	1,075	612	169	443	464	335	15	114
1929	1,111	631	168	463	480	342	17	121
1930	957	506	134	372	451	318	16	117
1931	797	395	106	289	402	290	14	98
1932	651	336	107	229	315	251	9	55
1933	626	340	102	238	286	226	7	53
1934	680	384	102	282	296	232	10	54
1935	701	391	107	284	310	236	12	62
1936	789	462	127	335	327	245	17	65

A more exact distribution of retained imports than we have made would have been possible if more information had been available of the kinds of materials used by different industries. We were able to use the reports of the Import Duties Inquiries for 1933 and 1934, but the 1935 Census of Production will give more detailed information of the materials used by different industries than has hitherto been published. For this reason the figures for 1935 and 1936 will need to be revised later.

Imports of materials for use by industry and agriculture were falling as a proportion of the value of total imports from 1924 to 1931, but since 1932 this tendency has been reversed. Thus, of the increase of £88 million in total imports between 1935 and 1936, it is estimated £71 million consisted of materials for use by industry and agriculture and £17 million of goods ready for consumption. This changing distribution of retained imports may be due in part either to a change in the volume of imports of materials for use by industry and agriculture compared with imports of goods ready for consumption or, secondly, to a difference in the movements of prices of materials for industry and agriculture and of prices of goods ready for consumption. In the next section of the paper we have attempted to measure the effect of these two influences separately.

III.

The Board of Trade publishes each year estimates of changes in the volume of retained imports. We have used a somewhat similar method here as the Board of Trade, in order to maintain comparability as far as possible with the official estimates. Thus each item of retained imports in 1924, 1930 and 1935 has been revalued at the average values in those years, and a series of index numbers compiled, using a crossed weight formula. The preliminary estimate for 1936 has been made by revaluing at the average prices in 1935 only. The classification of imports used in this paper is different from that adopted by the Board of Trade, but the change in the volume of total retained imports in Table III. agrees closely with the official estimates.

Changes in the kind and more particularly in the quality of imported goods may render this method of revaluation somewhat

hazardous when comparison is continued over a long period. Goods apparently the same and classified under the same heading in the official import list may differ in kind and quality. To minimise the error arising on this account we have used the more detailed classification of imports given in the Annual Statement of Trade, but even this precaution cannot prevent error in revaluing such items as machinery and certain classes of manufactured goods.

CHANGES IN THE VOLUME OF RETAINED IMPORTS, 1924-36.

TABLE III.

Year	Total Retained Imports	For Industry and Agriculture			Ready for Consumption			
		Total	Food, Drink and Tobacco	Other Materials	Total	Food, Drink and Tobacco	Machinery	Other Goods
1924	100	100	100	100	100	100	100	100
1930	113	107	103	108	120	112	163	143
1935	108	109	109	110	107	111	105	95
1936	116	121	117	122	112	112	154	107

Retained imports have been revalued, using the crossed weight formula, mainly in order to secure a greater degree of comparability within the series. Thus the increase in total retained imports between 1924 and 1930 calculated at 1924 prices was 11½ per cent. compared with 14 per cent. when calculated at 1930 prices. The decrease in retained imports between 1930 and 1935 was 2 per cent. at 1930 prices compared with 6 per cent. at 1935 prices.[1]

The changes in average values have been measured by dividing the actual values of imports in Table II. by the estimated changes in volume of imports in Table III. These figures, which are given in Table IV., reflect mainly changes in prices but also, as noted above, to some extent, changes in quality of imports. It will be seen from Table IV. that the rise in the

[1] For a detailed explanation of these differences see the Board of Trade Journal, January 21st, 1932, and March 4th, 1937. The reason for these differences is mainly the unequal rise and fall in the imports and the movements of prices of different commodities between 1924 and 1935, though they are due in part to the fact that the refining of sugar in bond ceased in 1928.

average value of total retained imports which has been increasing slowly since 1933 continued in 1936; between 1935 and 1936 it was wholly due to an increase in the prices of materials and food, drink and tobacco.

CHANGES IN THE AVERAGE VALUES OF RETAINED IMPORTS, 1924-36.

TABLE IV.

Year	Total Retained Imports	For Industry and Agriculture			Ready for Consumption			
		Total	Food, Drink and Tobacco	Other Materials	Total	Food, Drink and Tobacco	Machinery	Other Goods
1924	100	100	100	100	100	100	100	100
1930	75	69	64	70	84	83	109	84
1935	57	52	49	54	64	62	127	63
1936	60	56	53	57	64	64	121	58

The importance of these changes in import prices is more clearly shown when compared with prices obtained for exports. The average values of both imports and exports have declined since 1924 and particularly since 1929, but the fall in export prices has been less than the fall in import prices. Thus, the average value of exports fell from 100 in 1924 to 78 in 1930 and 65 in 1935, and rose to 67 in 1936.

IV.

The total value of goods consumed in the United Kingdom and goods exported from the United Kingdom has been estimated at £3,115-£3,195 million in 1924, and at £2,860-£2,955 million in 1930. These figures relate to the total value of home-produced goods as they leave the factory or the farm, either for export or for sale in the home market but deducting customs and excise duties paid, and of goods imported ready for consumption as they arrive at ports of the United Kingdom. The landed value of total retained imports—materials for use by industry and agriculture in making goods for export or for sale in the home market together with goods imported ready for consumption—was £1,137 million in 1924 and £957 million in 1930. Thus the proportion of the value of retained imports to the total value

of goods consumed in the United Kingdom and goods exported from the United Kingdom was thus 35½-36½ per cent. in 1924 and 32½-33½ per cent. in 1930. The experience of 1930 was however, to some extent exceptional. Comparison of the movements of production, imports and exports suggests that in 1936 the proportion of retained imports to home consumption and exports was less than 30 per cent.[1]

In making these comparisons no account has been taken of the fact that part of national production is of a kind which can only be disposed of within the United Kingdom, and that competition between imports and such home production is very limited. The output of government departments, waterworks undertakings and public utility services, together with part of the output of the building and printing industries, is of this kind. On the other hand, it may be argued that in case of dire necessity most classes of imports could be produced in this country, although in many cases the cost would be almost prohibitive. Further, it should be remembered that the smallness of the amount of a particular class of goods imported may give no indication of how indispensable those goods are.

V.

It is now possible to state more precisely the changes which have taken place in the import trade during recent years. The volume of retained imports after allowances for changes in prices was 16 per cent. higher in 1936 than in 1924 and even higher than in 1929. This increase, compared with 1924, was due to a rise in imports both of materials for industry and agriculture and of goods ready for consumption. Compared with 1929, however, the increase was due wholly to larger imports of food, drink and tobacco. This general expansion of imports has been in marked contrast to the experience of the export trade since the war. In no year since 1924 have retained imports been less in volume than in 1913, and in 1936 they were at least

[1] For details of the methods used in estimating the value of national production and for other methods of comparison between imports, exports and national production, see G. W. Daniels and H. Campion, *The Relative Importance of British Export Trade*, London and Cambridge Economic Service Special Memorandum, Number 41.

20 per cent. higher than in the last year before the war. Exports in 1936, on the other hand, were 21 per cent. less in volume than in 1924, 25 per cent. less in 1929, and 30-34 per cent. less in 1913.

This divergence of the movement of the quantities of imports and exports has been made possible in part only by a fall in import prices compared with export prices. Thus, the ratio between export and import prices was 100 in 1924, 104 in 1930, 114 in 1935 and 112 in 1936. Prices of imports were at their lowest level in 1933, but have since risen until they are now about the average of 1931, except for the prices of finished goods which were still falling in 1936. Of the increase of £88 million of imports in 1936 compared with 1935, about two-fifths were due to the rise in prices of foodstuffs and raw materials.

G. N. Butterworth
H. Campion

100 per cent. Money

(1) We intend in this note to develop a few criticisms of the various schemes of "100 per cent. money and bank reserves" along the lines of the modern theory of liquidity. Our remarks refer not to any particular version of the scheme, but to the idea in general; they are also partly applicable to all schemes for regulating the level of bank reserves by the monetary authorities.

In the last few years various proposals for controlling the excessive supply of money have been discussed in the United States, where it is constantly feared that the excessive bank reserves may constitute a great difficulty to the monetary authorities. Among them are many versions of "100 per cent. money," of which several have been much debated in the American universities. They are known under the generic name of the "100 per cent. scheme of bank reserves" or Chicago Plan, after the city where the idea originated. Some of the promoters of the 100 per cent. movement claim that the reform will not only cure the alleged inherent deficiencies of the American banking system, but moreover that it will produce further innumerable benefits to the economic structure of the society. Professor Irving Fisher, one of the advocates of the movement, has devoted a whole volume to this question. The title of his book, viz., 100 *per cent. Money Designed to Keep Chequing Banks* 100 *per cent. liquid*; *To Prevent Inflation and Deflation*; *Largely to Cure or Prevent Depressions*; *and to Wipe out Much of the National Debt*[1], shows that Professor Irving Fisher and probably many of his advisers ascribe to the plan very ambitious consequences going far beyond the realm of money and banking in the narrow sense.

The essence of "100 per cent. money" is to "divorce" money from banking. All deposits in the banks are to be fully covered by cash reserve or by deposits in a Federal Reserve Bank. All

[1] Published in New York, 1935.

Member Banks are to keep a dollar for dollar cover in the form of cash or deposit in the Central Bank against all or some types of deposits.[1]

(2) All these schemes, in the pursuit of credit control and a safer banking system for the United States, attempt to separate the "loaning" activities of the banks from their money creating, or "credit coining" activities.[2] But the trouble is that there is an intrinsic link between these activities which the advocates of "100 per cent. money" so easily overlook. It is impossible to imagine a loaning activity which does not take into account the *time element*, in the shape of the period for which the loans are granted. Lending activities are thus linked with the supply of money through the factor of liquidity preference. Loans are regarded by creditors as being more or less of the cash-substitute

[1] I am aware of the following variants of schemes advocating 100 per cent. cash reserves, namely, those of Prof. Simons, Prof. Irving Fisher, Mr. Hemphill and Dr. Currie, Mr. Elgin Groseclose (presented in *Money ; the Human Conflict*), in which deposits are to be fully backed by gold or gold certificates, Mr. G. Le Blanc, Prof. Knight, Senator Cutting and Representative Patman. In a milder form (less than 100 per cent.) many schemes have been put forward on different occasions, and actual legislation has been passed for raising the statutory minimum bank reserves.

For a good compilation of view on the "100 per cent. scheme" cf. Dr. Albert G. Hart, *The Chicago Plan of Banking Reform* in the *Review of Economic Studies*, Vol. II., February, 1935.

Some of the variants of the scheme go so far as to claim that it will wipe off the whole or part of the national debt. This, however, is not the view of the more moderate advocates of the scheme.

[2] Cf. Dr. Lauchlin Currie, *The Supply and Control of Money in the United States*. Dr. Currie says of these two functions that "logically they are quite distinct. Their association in modern monetary systems is purely an historical accident" (p. 152). Professor Simons speaks of "complete separation, between different classes of corporations of the deposit and lending functions of existing deposit banks," which is logically much more plausible. (*A Positive Programme for Laisser faire—Some Proposals for a Liberal Economic Policy*).

Professor Irving Fisher's dictum runs as follows : "All I would do is to take over the monetary work of banks, leaving real banking to bankers" (p. 1) ; and later : "The chequing deposit department of the bank would become a mere storage warehouse for bearer money . . ." (p. 3) in an address delivered to the Controllers' Institute of America on September 18th, 1934. Professor Irving Fisher later published his book, 100 *Per Cent. Money*, which, however, does not contain many more new ideas except certain refinements and elucidations of the views put forward on previous occasions.

According to Dr. Albert Hart, monetary control is the real substance of all the 100 per cent. schemes. Cf. his article in the *Review of Economic Studies*.

type. Generally speaking, loans with more distant periods of redeemability or requiring a longer period for negotiation of sales bear a greater risk of illiquidity. In the general scale of liquidity of assets they are regarded as occupying a less favourable position. This affects the degree of substitutability between these loans and money.[1]

The more the liquidity of these loans approximates to cash liquidity, the more cash is released for other uses. On the other hand, the less perfect substitutes to cash they are,[2] the more the quantity of cash which must be held in reserve for unforeseen contingencies and for satisfying liquidity motives[3]. When dynamic fluctuations are introduced into the picture this link between the supply of certain types of loan and the creation of money becomes even more obvious.

(3) All funds in the banks subject to cheque would under the 100 per cent. scheme be completely sterilized. No one not even the monetary authorities) would be able to transform them into useful employable funds.

The main function of the banks is at present to transform short loans into longer loans. Therefore, the banks are on balance debtors in the market for shorter loans and creditors in the market for longer loans. They act as liquidity substitution centres. Now under the 100 per cent. schemes the liquidity substitution function having been removed from the banks, the loan market will have to bring into direct contact all the individual investors and borrowers for each particular type of loan ; thus it will split into separate markets, each specialising in loans of a given duration of time. This will generate on the supply side of loans two tendencies : First, those short term funds which banks used to transform into longer funds, must now be either lent directly between individuals or must be hoarded by the

[1] All assets can be arranged in a descending order of liquidity with cash being regarded as the standard of full liquidity : cf. my *Doctrine of Liquidity* in *The Review of Economic Studies*, Vol. III., February, 1936.

[2] On the point of substitutability between cash and other commodities : cf. a recent article by Dr. P. N. Rosenstein-Rodan where he says that "It is most unlikely that a cash balance should be 'an independent good' for one individual." In *The Co-ordination of the General Theories of Money and Prices, Economica*, August, 1936, p. 263.

[3] Cf. Mr. J. M. Keynes, *General Theory of Employment, Interest and Money*.

owners. The latter is more likely as the incentive offered by the banks to depositors is now removed. Secondly, if loans are made between individuals the risk of illiquidity is greatly increased. These will both act to make people wish to hold more liquid assets and will increase their preference for granting the shortest types of loans. The supply of the shortest funds will thus be increased relative to the supply of loans for a longer duration.

This short term capital will have to find employment and will seek short term investment. On the demand side, scope for the shortest type of lending will be very limited, due to the shortage of borrowers, and thus capital will have to look for employment elsewhere[1]. Owners of short term balances will to some extent be confined to hoarding. In a progressive economy they find an apparatus transforming the funds in time ; so far it has been to a very great extent in the hands of the banks. Now, however, that the loaning activity has been taken from the banks, this apparatus will cease to exist. First of all let it be clear, that the supply of short capital relative to demand will increase as the liquidity substitution centres in the form of banks will be abolished, this will cause rates of interest for loans of different maturities to differ more than at present. This disparity will be partly mitigated by the fact that certain individuals will be tempted directly, and some others indirectly, through investment trusts, to act as liquidity substitution centres. But individuals cannot act so efficiently in this capacity as the banks which do it professionally and they must consequently charge a higher rate for long term loans.

In Professor Simons' version of the scheme the transformation (in his words the "illusion that funds can at the same time be both available and invested") will be removed.[2] Hence, cash will be used as cash and nothing else. But Professor Simons is also opposed to short term borrowing, thus short term funds will also have to be kept in cash, and will flood the market with

[1] The liquidity-substitution function being removed from the banks, the demand for shorter capital usually coming from the banks for the purpose of transformation will now be reduced ; similarly the supply of longer loans through the banks will decline.

[2] Simons *loc. cit.*, pp. 38-39.

cash whose storage and handling must cost something. In his plan, lending will be done by investment trusts. This reform means a complete change in the illiquidity risk-bearing activity of the community; what was previously borne professionally by banks will now be passed as an additional burden to individual investors. Each holder of outstanding balances, which will pay to be invested, will *ipso facto* become a liquidity-substitution centre and so will be linked with the fates of some other enterprise.

In Dr. Currie's model[1] the transforming mechanism would be partially preserved and would be left with banks in so far as the saving accounts, not subject to cheque are concerned, while the Government will take the responsibility for cheque accounts. He realises that this would mean a serious curtailment of the existing volume of credit, and mentions therefore his somewhat mysterious "new loaning agency."

(4) A very brief remark only need be made about the generally obvious point that with 100 per cent. money bank charges would have to be considerably increased. It is worth noting that in the efficient banking system of the United Kingdom, the current-account depositor must still pay bank charges, though the banks maintain only about 10 per cent. reserves. What will be the result if earning assets fall to zero is easy to guess. An increase in bank charges would cause a considerable outcry[2], and may induce some people to hoard their money.[3]

(5) In the light of the 100 per cent. reserve scheme it may be interesting to look at the distinction between the private and the public character of the banking system. The whole private character will disappear, as all the banks will provide an equal degree of "safety" to the depositors. The bank deposits will flow more freely from bank to bank according to which provides the cheapest facilities for handling cash and cheque transactions.

[1] See *op. cit.*, pp. 152-4.

[2] Cf. "Bank Charges," *The Economist*, June 22nd, 1935, p. 1430.

[3] Dr. Albert Hart has mentioned in the section on transitory periods the need for a subsidy if the bankers were to carry the chequing accounts. But he is wrong if he thinks that such a subsidy will have to be paid only during the transition period from the present system to the "100 per cent. scheme."

This will also affect the location of the banks which will have to move from place to place so as to be near the spots where deposits can be collected and payments made, and not where the business of lending is done ; in consequence this must have a great effect on the cost of clearing operations and means a dearer banking service for the community.

(6) In order to become effective the scheme must regulate saving as well as cheque deposits. Otherwise, if only chequing deposits were subject to the full reserve rule, as it is suggested by some writers the banks could expand credit on the basis of their saving deposits, and methods would soon be evolved whereby *de facto* cheque deposits were legally held to be time deposits[1]. This means that only the more radical schemes of 100 per cent. reserves against all deposits can have the effects contemplated by their advocates.

(7) Being compelled to keep all their assets in cash, the banks will possess assets of a constant degree of liquidity. If now for some reason or other the whole community demands more or less liquidity,[2] it must, if possible, be satisfied by the monetary authorities without the intermediary of the banks. This must mean open market operations directly with the public ; a method whereby it would be difficult to influence liquidity in those sections of the community where it is desired to bring about the change. The banks, having a large spread of assets in their hands with various degrees of liquidity, can immediately reach the type of assets required as soon as the banks are themselves affected, while the monetary authorities acting directly would have to seek for such assets specifically, involving continual buying and selling. This, one must admit, is a very rough tool of credit control compared with the present efficient tool of properly managed discount rate which keeps in touch with happenings in the market.

[1] This surely would be so on the days when they would not be controlled by some government or other monetary authorities. On the other hand, it is for technical reasons difficult to imagine that all banks would have their liabilities and reserves controlled every day.

[2] This can be due to any change in the liquidity-preference of the public.

In those other "100 per cent. schemes," in which only deposits subject to cheque are fully covered by cash, and saving deposits are not safeguarded with any reserve regulation, there is of course more room for liquifying a portion of the banks' earning assets. The assumption that saving deposits are "not money[1] and need not bother the authorities, is wrong. Any scheme of this sort is bound to break down for it is impossible in practice to differentiate between different types of deposits, which are highly interchangeable.

(8) As the banks are now unable to supply liquidity, the burden of liquidation would therefore fall exclusively on the shoulders of the community. But such liquidation must necessarily be less elastic than that which takes place through the banking system, which naturally has a greater resistance than individuals. Assuming that even with a 100 per cent. reserve scheme in operation, the trade cycle will still exist the monetary authorities will have to intervene to a greater degree and more frequently than at present.

In Professor Currie's scheme the position would be further aggravated by the fact that each entrepreneur's funds would be directly connected with other entrepreneurs' businesses, through his proposed system of investments trusts which is the only possible way open to him for investing his free short term funds. A fall, therefore, in one line of business would immediately cause liquidation in others. But this is only a matter of degree compared with the banks, which have a greater resistance. With the flexible structure of the assets of the present banking system, the latter can always in cases of minor crises of liquidation act as buffers.

In giving these points, which are by no means exhaustive, we have attempted to show that credit control through the "100 per cent. schemes" is much more difficult and irksome than the much more easy and more efficient direct control through the discount rate policy of central banks.

A. M. Neuman

[1] Cf. Currie, *op. cit.*, p. 152 and p. 163.

World Population[1]

Professor Carr-Saunders has provided us with a most clear and readable account of the population problem in the world of to-day.

The population of the world grows only by an excess of births over deaths, that of a particular area by the combined effect of an excess of births over deaths and of immigration over emigration. It is estimated that in 1650 the population of the world was 545 millions, of whom 100 millions were in Europe, 330 millions in Asia, 100 millions in Africa, 13 millions in America (12 in Central and South America), and 2 millions in Oceania. For 1933, the population is estimated at 2,057 millions, 519 millions in Europe, 1,121 millions in Asia, 145 millions in Africa, 262 millions in America (125 in Central and South America), and 10 millions in Oceania. Thus the population of the world increased about fourfold in less than 300 years, that of Europe and Oceania increased about five-fold, Asia about three-and-a-half times, Africa by only about 50 per cent., America about twentyfold. Europe has somewhat gained, Asia somewhat lost in its share of world population, and that of Oceania has remained about the same. America has gained enormously, having to-day 13 per cent. of the world's population, Africa's share has dropped from 18 to 7 per cent.

To what has this enormous increase of population been due ? In England and Wales, Norway and Sweden estimates of birth and death rates begin to be available about the beginning of the eighteenth century, in the rest of Europe only after 1800. A study of these estimates shows no fall in the birth rate before 1880. In 1750 the birth rate in these countries already exceeded the death rate. Between 1750 and 1880 the birth rate fluctuated about a high level, 30-40 per 1,000, but the death rate fell continuously from about 30 to about 20 per 1,000. Thus the increase in the population in this period was due to a fall in the death rate. After 1880 the death rate continued to fall, but the birth rate fell even more rapidly than the death rate until to-day

[1] *World Population : Past Growth and Present Trends*, by A. M. Carr-Saunders (Oxford University Press. 12s. 6d.)

they have almost reached coincidence somewhat below 15 per 1,000. The course of events in South-West Europe was somewhat similar, though with a lag of perhaps two decades. In Eastern Europe the birth rate kept above 40 per 1,000 until well into the twentieth century, the death rate, though high, was below the birth rate and has been falling steadily since 1890. We may say then that the increase in the population of Europe in modern times was due to a fall in the death rate ; but that as far as Northern and Western Europe is concerned an even more rapid fall in the birth rate since 1880 has almost brought it to a stop.

The case of the United States and Canada is somewhat different ; in the United States the birth rate was above 50 per 1,000 until after 1830 (the same was true among the Catholics of Quebec for more than a century, until about 1850, and even now their birth rate is more than 30 per 1,000). There is no information about the death rate until after 1900 ; but in recent times it has been lower than in North-West Europe. The cause of the stupendous increase in the population of the United States during the nineteenth century was the combination of a very high birth rate with a low death rate, which is only possible in a new country attracting a stream of immigrants. The birth rate has now fallen heavily, and the natural increase is at about the same level as in North-West Europe.

The causes of a fall in the death rate the author classifies into political, social, sanitary and medical. In Northern and Western Europe public order was already well established before 1750 and the first cause played little or no part, but it is probable that the death rate in Russia was reduced for this reason as a result of the administration established by Peter the Great, and that in other parts of Europe the death rate also fell in the eighteenth century for similar reasons. The population of Japan was apparently increasing from 1650 to 1721, was stable to about 1850, and then began to increase again. The increase up to 1721 was probably due to the maintenance of public order in the seventeenth and early eighteenth century, that it did not continue subsequently was owing to the growth of the practices of abortion and infanticide, while the population grew again as

these practices were abandoned after 1850. The author considers there is no evidence of a fall in the death rate from social, sanitary and medical causes before the last decade. The population of China probably increased in the eighteenth century when order was maintained by the Manchu dynasty, it is said not to have increased in the last half of the nineteenth century. In India, Ceylon, Java and Egypt the maintenance of order by the British and Dutch resulted in a fall of the death rate, but there is apparently no evidence that social, sanitary or medical factors have yet had much influence on the lives of the non-European peoples ; the expectation of life in India for instance being, as far as is known, the same now as in 1890.

The cause of the slowing down of the rate of population increase in Northern and Western Europe and in the United States since 1880 is the rapid fall in the birth rate, more rapid than the fall in the death rate. Southern and Eastern Europe seem to be going the same way. This fall in the birth rate is due almost entirely to a decline in the specific fertility rates of women. "In every country for which figures are available it appears that the decline (in the birth rate) has coincided with a fall in specific fertility. The changes in age at marriage and in amount of marriage have varied in direction and in importance, but it is only in the new countries, and then only for short periods, that they have been of any significance." Birth control can be held to be a sufficient explanation of this decline. "Since birth control methods are known to be effective, to have been increasingly used and to be employed at the present time on a very wide scale, there is no doubt whatever that their use explains the decline in a large part. It may be the whole explanation. But it is possible that other factors, not being practices or habits adopted with the object of reducing the birth rate, may have been at work. It is possible, for instance, that there may have been some reduction in the frequency of intercourse, and it is possible that unsuspected agencies may have been in operation. However this may be, it would not seem likely that such factors can have been of serious importance."

The balance of births and deaths at any time is affected by the age constitution of the population. At the present

moment the age constitution of the population of this country, for instance, is favourable to birth because a large proportion of the women are of child bearing age. This is because they are survivors of girls born at a time when the birth rate was higher than it is now. Such an advantage can only be temporary and to get a true picture of the situation it is not sufficient to compare the actual births and deaths in any year. We must enquire whether the girls born in one generation, who are the mothers of the next generation, are, in fact, replacing themselves. Any increase in the number of male births or in the average length of life may increase the population temporarily but cannot affect population trends.

For this purpose there are two measures of particular importance, the *gross and net reproduction rates*. These important measures were invented by Lotka and extensively employed by Kuczynski. The *gross reproduction rate* gives the number of girls who would be born on the average to each woman who passed right through the child-bearing period (which may be taken as 15-50 years). It is quite independent of mortality and if it is less than unity, then however low the death rate, the population cannot maintain itself. The *net reproduction rate* is the average number of girls born to each woman of the previous generation, taking into account the mortality as well as the fertility of the latter. It is the net reproduction rate which measures whether the population is maintaining itself or not. The results of the calculation of the net reproduction rate are interesting and perhaps startling. In 1933 England had a net reproduction rate of 0.735, and for most of the countries of Europe it was less than unity ; for the whole of Western and Northern Europe it was 0.76.

Thus if the fertility and mortality of those countries remain as they are their population must decline. Kuczynski has calculated that if the population of Soviet Russia continues to grow as, according to official figures, it grew from 1924 until 1934, it would by the year 2000 amount to 650 millions ; if fertility and mortality remain in Western and Northern Europe what they were in 1933, the population which now is about 193 millions, would reach its maximum of 196 or 197 millions

in the late 1940's, and by the year 2000 would be reduced to 150 millions.

It can be shown that as far as Northern and Western Europe are concerned neither further reduction in the mortality of women of child bearing age nor more and younger marriage could do much to remedy the situation. Only an increase of specific fertility could do so. Since the decline in fertility has been mainly due to the spread of birth control only an increased desire for children can be effective. The policies that have been adopted in Italy and Germany, to encourage parenthood, and the system of family allowances current in France and Belgium have not, it appears, had much effect. The author has an illuminating chapter on the difficulty and intractibility of the small family problem. Nothing less than a social revolution is necessary, he thinks, to effect that transformation of the whole scheme of life which will gradually have to be accomplished if the inconveniences attaching to parenthood are to be removed and the special problems attaching to parenthood are to receive due consideration.

Migration movements are also discussed with the greatest care in this book. We cannot follow the author into the details of this discussion. He thinks that Poland and Italy certainly, and South-East Europe to some slight extent, are overcrowded, and that this overcrowding are not of a kind that can be relieved immediately by a resumption of world economic activity. China and India are overcrowded to such an extent that they actually afford instances of the Malthusian position of a population limited by its food supply. He is pessimistic about the possibility of relieving this congestion by any extensive emigration to under-developed countries such as are some parts of the British Colonial Empire and Abyssinia. "If the position of the under developed countries has been correctly stated, it follows that the only possible areas to which emigrants from the densely populated non-European countries can go are those which constitute Europe overseas. The present situation in these countries has been described, and the problems which arise have been discussed. A summary of what has been said will suffice. If we admit the validity of the view that the resources of all

countries ought to be fully exploited, it follows that the population of European countries overseas should continue to grow for several decades at about the same speed as has obtained during the last half century. If these countries were willing to take part of the natural increase of South and East Europe, where there is congestion and where an unwanted surplus of births over deaths will continue for some time to come, this speed could be maintained for some decades. But in view of the decline in fertility throughout the sphere of European civilisation, it is doubtful whether these countries would be adequately peopled before the sources of migration dried up."

In the latter event, the author points out that the choice would be between leaving them only partially exploited and experimenting with a mixture of peoples, including Asiatics. The objections to this course from the European point of view are that it is wise not to attempt to build up a community by mixing the major groups of mankind, if a harmonious result is to ensue. The non-Europeans are likely to argue that the mere chance which led a handful of Europeans to settle in these vast areas before Asiatics appeared on the scene should not be allowed to govern the whole future history of these areas. The Europeans will retort that as long as the family remains unlimited among non-Europeans, emigration will not help to ease the difficulties which arise from over population, the gaps caused by emigration being rapidly filled up. This part of their case will, however, disappear when, as is beginning in Japan, births come under control in the non-European countries.

In conclusion we would say this. There is a growing knowledge of the importance of the population problem among all thinking people and a growing consciousness of the influence population trends are likely to have on the history of the next fifty or hundred years. But until lately it has not been easy to obtain a simple and concise resumé of facts of very great complexity. This need is satisfied by Professor Carr-Saunders' book.

J. O. Irwin

The Trade Cycle[1]

MR. HARROD'S theory of the trade cycle is worked out in terms of, and is essentially based upon, the interactions taking place between two economic relatives—the *multiplier* [the relation between the quantum of output (income) consumed (spent) and the quantum of output (income) not consumed (saved)], and the *relation* (the relation between the rate of increase of output of consumable goods and the output of capital goods).[2]

When, for whatever reason, activity is increasing or decreasing, the interactions between the relatives tend, for a time, to maintain the change. Thus if the output of capital goods increases, the multiplier ordains such an increase in income as will expand savings sufficiently to cover the increased investment ; as income increases and output of consumption goods expands, the relation ordains that increased investment becomes possible (necessary). It was evident that the acceptance of Mr. Keynes' thesis would necessitate the postulation of upward and downward swings of activity to and from "full employment." A state of depression presents opportunities for investment, which in turn allow expansion. Contraction necessitates a curtailment of investment which forces contraction. We cannot stay in depression because of the investment possibilities of employing the unemployed ; we cannot stay in boom because of the lack of investment opportunities to which that state condemns us. Mr. Harrod interprets these misgivings in his own way, and presents them as a logical system.

At any time output is confirmed at its given level by the relations between prices, marginal costs (dependent upon factor prices and "technical" conditions) and conditions of demand. Given the values of these variables, output is determined and

1 "*The Trade Cycle.*" By R. F. Harrod. (Oxford University Press. 1936. Pp., 248. 10s.)

2 In fact the output of capital goods can be said to depend not only on the rate of increase of output of consumers goods, but on the rate of output of capital goods ; this is particularly true in the later stages of recovery when the capacity of capital goods industries is extended.

held at the given level. Taken together they are determinants, and in relation to the first, the others are stabilisers. Thus, suppose a given level of prices obtains, so that, given real wages, money wages are determined, then, under conditions of imperfect or monopolistic competition (which Mr. Harrod assumes), entrepreneurs will provide that output which equates marginal revenue with marginal cost. If prices rise by a given amount, output is prevented from rising without limit (provided factors are available) by any tendency to diminishing returns, increases in factor prices, and by any tendency for demand to diminish in elasticity. Thus alterations in prices measure the potency of the stabilising factors; action and reaction hold output at some level determined by the relations of the determinants.

The interest of these determinants is not that they determine what the level of output shall be (for being dependent functions of that level they cannot do this), but that for Mr. Harrod's purpose they facilitate the analysis of the conditions under which different outputs can be put forward. Thus, when prices rise with output, an increase in marginal cost relative to average cost increases profit per unit, an increase in price relative to marginal cost (as demand becomes less elastic) has the same consequence. Mr. Harrod points out that the coincidence of rising prices and output is a matter of observation (and not of deduction),[1] and concludes that, therefore, factor prices *must* rise, demand *must* become more elastic, or diminishing returns *must* operate, or that all or any combination of them, positive on balance, must prevail. Not only do factor prices rise, which again is a matter of observation, but profit per unit also. Hence, as Mr. Harrod concludes that the tendency to diminishing returns is not normally operative (except on account of deficiencies in personnel), the most important explanation of the shift to profit and the most important stabiliser is the tendency to diminishing elasticity of demand.

The argument is ingenious, but its validity may be doubted.

(1) The more spectacular rises in profits occur in those industries in which output fluctuates considerably and in which

[1] I think that many will dissent.

average (prime) costs are much influenced by output, *e.g.*, mining, iron and steel, engineering and shipbuilding, railways, certain types of distributive services (*e.g.*, of petroleum spirits), plantation industries, etc. It is by no means certain that a large part of the shift to profit is not explained by this factor to which Mr. Harrod does less than justice. It does not, of course, explain the rise in prices, but it may well, contrary to Mr. Harrod's apparent opinion, obviate the necessity for seeking some reason (such as the tendency to diminishing elasticity of demand) that will explain both the rise in prices and the shift to profit. It explains as fully as is necessary our not very reliable information, particularly the rapid improvement of profits which occurs when industries achieve that level of output which puts them "out of the red" or allows them to "break even." Consider the experience of our own iron and steel industry two or three years ago, or of the U.S. industry last year, or of innumerable foreign railways at the present.

(2) Mr. Harrod explains that a very substantial part of the tendency to diminishing returns, accounting for some part of the rise in prices explaining the shift to profit, results from the employment of "duds." "In the normal cycle the human factor is much more important. As output increases duds may be taken on . . ." (p. 53). Conceivably this may be important, but not so important as one might, at first, think. For it is not clear that the method of costing adopted by entrepreneurs is such as would give full weight to the increase in marginal costs due to the employment of less skilled men ; methods of payment may recognise differences in efficiency ; the more valuable employees may obtain bonuses over and above what is due to them in wage agreements,[1] as they are frequently obtaining to-day ; while the increase in the efficiency of the less efficient is often only a matter of a relatively short time, during which an alteration in price policy would be neither desirable nor practicable.

But another aspect of the tendency to diminishing returns may be of great importance. During sub-normal activity less

[1] In so far as bonuses are paid, because less efficient workers are paid at equal standard rates, they may be regarded as an increment of cost ; but whether they are so regarded is a matter of doubt.

efficient or unfavourably situated "plants" are shut down or partially shut down and placed upon a "care and maintenance" basis (whose costs swell average *primes*, c.f. (1) above). This is true of rubber plantations; it is obviously true in the many branches of the mining industry; it is true of blast furnaces, steel mills, cotton mills, ships, and many other kinds of equipment which are not easily or speedily constructed or destroyed. As demand increases and prices rise they contribute their supplies. "Capital goods can be and are increased in the course of the boom." But industry is not re-equipped in the course of a boom, for there is not time, nor are the more cautious precipitate in increasing capacity, nor are sufficient resources available to do everything which at any one time would be profitable. There are not a great many industries for which the average costs of different firms are available, but from what we do know we are justified in concluding that there are substantial differences which go some part of the way towards explaining why the more efficient can increase profits more than output.

(3) Price increases may require a variety of explanations. A shortage of labour may cause costs to rise sharply (and a lag of wages under cover of agreements may augment profits). Prices may be pushed up by speculation and the shortage of immediate supplies, thus raising profits and "factors" costs in different industries. Perhaps scarcities of these different kinds play a very considerable part.[1]

(4) There does not appear to be much room or any urgent necessity for Mr. Harrod's explanation of rising prices and profits, viz., that rising income makes demands less elastic, causing the value of marginal revenue associated with a given price[2] to fall. It might be argued that demand tends to become less (or more) elastic at the old amount or at the old "real"

[1] In a recent application before a Licensing Authority a haulage firm put forward the plea that the shortage of cotton yarn made it desirable that manufacturers (*i.e.*, weavers) should obtain delivery on the day of despatch.

[2] p. 18; Mr. Harrod does not define his Law of Diminishing Elasticity of Demand, but presumably demand becomes less elastic at the new point of equilibrium than at the old, so that the proportion of "real" income to profit receivers increases.

price (if this means anything as Mr. Harrod appears to think on p. 18), but it is difficult to marshall *a priori* reasons why it should be less elastic at a new position of equilibrium, with amounts and prices different. Indeed, the reasons that can be urged point the other way. Higher incomes allow a wider range of substitutes. In regard to producers' demands for factors and instrumental goods, it may be suggested that rising prices encourage continued (perhaps increased) vigilance in placing contracts, because of the many disadvantages entailed in passing on higher costs to consumers, of which there is no doubt they are well aware. In fact, conditions of obviously imperfect competition do not appear to encourage the raising of prices. Whether this is connected with the elasticity of demand schedules may be doubted ; but if demand does tend to become less elastic in good times and traders do not take advantage of the fact, Mr. Harrod's law fails as an explanation of rising prices and profits. Producers do not care to risk trade connection, upset advertising campaigns, destroy goodwill and imperil the real equity of a business for transient advantages. The more imperfect is competition, the more these considerations appear to prevail.[1] Mr. Harrod notices these arguments in a footnote to p. 51, and explains that "reckoning the future . . . demand becomes more elastic than otherwise."

But in reality new elements enter into the problem—of uncertainty, concerning demand and rivals' policies, of cost, of the nature of producers' interests in their businesses, and finally, of the meaning of marginal revenue. Mr. Harrod places too great a strain upon the useful preparatory results obtained in the field of imperfect competition, without gaining anything substantial from it.[2]

(5) When prices are rising, imputation is a chancy process, and inventory profits are made. Windfalls of this kind are of

[1] It is interesting to notice that the price of aluminium has remained constant for some years, while the price of nickel has recently been reduced—commodities in which monopolies are interested.

[2] It is interesting to notice that in one industry in which competition is imperfect, though keen, namely, retailing of clothes, etc., it is customary for the mark-up to be a constant proportion of buying price. Although this may explain (part of) the rise in *money* profits, it does not explain the shift to profit.

notorious importance in such trades as the woollen industry, some branches of cotton spinning, sugar refining, metal smelting, paper making and merchanting, but undoubtedly they play some part in many industries in swelling profits. In the upward phases of the trade cycle, price movements of the following kind are common. Imagine a state of equilibrium, with current and prospective supplies equal to market requirements at current prices. As a result of some change, forward supplies at ruling prices are estimated to be deficient, although at the old price spot supplies are sufficient. Forward prices move upward under the influence, say, of plastic factor prices, diminishing returns, or even under the influence of a scarcity which a hypothetical increase of marginal costs in different plants does little to illumine. The spot price rises in sympathy, but that rise could, of course, be prevented by an expansion of current supplies and their purchase and supply at prices just sufficient to make carrying remunerative.

This would necessitate the accurate forecasting of future movements in demand and a correct anticipation of the timing of the movements. The latter is an especially difficult matter, as recent events in the markets for copper, tin, wolfram, zinc, lead and other non-ferrous metals has shown. When considering dynamic movements we have to take into account the reasonable and, as the world is, probable consequences of those movements. Prices are not always "determined" by marginal costs, revenue conditions and factor prices in the narrow, or prospective, sense. Mr. Harrod has a most hearty contempt for the "set of ideas" connected with the quantity theory of money, but they still have their use, though one hastens to add that it is a matter of opinion how they are best handled in analysis.

As activity increases and prices rise, the proportion of the national dividend represented by profit increases, and this sets a limit to the increase in activity associated by a given quantum of investment. As investment increases in an economy in which unemployed resources are available, then, other things being equal, the national income must expand under the influence of the demands of the factors newly employed, until a sufficient sum is saved to finance the increment of investment. If each

additional factor remunerated insists upon spending (or finds it technically possible to spend) its income, prices must rise without limit and output must expand to the appropriate extent ; if each factor additionally employed refrains from spending part of its income, prices and output will find equilibrium. The greater is the "propensity to save" the smaller is the increase in activity associated with a given increment of investment—the propensity here meaning the relation between the proportion of an individual's increment of income saved and the proportion of aggregate income previously saved. Hence, as individual incomes expand in good times, and the propensity to save is likely to increase with income, activity will encourage the saving of a greater proportion of income. The shift to profit reinforces this tendency, increasing abnormally as it does the incomes of the wealthier. In determining activity, these factors damp down its fluctuations, for successive incremental investments call forth successively smaller incremental responses. Much may be said about what the representative man may do when his income expands, tracing budgetary and fiscal reactions[1] and balancing "easy come, easy go" against an assumable stickiness in habits of life, without arriving at any very clear conclusions. Yet a larger proportion must be saved, because investment is a larger proportion of output. High profits help to explain this, for they are not fully distributed but saved by companies, while boom profits are recognised to be impermanent and hence carefully conserved[2] There is, however, a purely technical reason of some importance which Mr. Harrod neglects, namely, that affecting the velocity of circulation. Thus, liquid resources may[3] be amassed to pay dividends and consumers' balances may be built up to meet some projected expenditure hitherto too extravagant. Such impediments to circulation deserve consideration equally with saving in its usual sense.

[1] Too much attention should not be paid to these reactions as the trade cycle is older than social services.

[2] On the other hand, as Mr. Harrod notices in considering the Wall Street boom of 1927-9, capital appreciation may well cause people to spend more generously.

[3] Funds may, however, be borrowed to prevent an immobilisation of balances.

Before the two determinants can usefully be discussed, it is necessary to introduce the third—the relation between the increments of capital and their products or the amount of capital used in production. Suppose that a given "investment" is made in some entirely non-productive public work (*i.e.*, digging holes) ; this is extremely capitalistic, for it gives a zero return of output. Even if the multiplier (based upon the first two determinants) is zero this investment is justified, for consumption will increase sufficiently (*i.e.*, not at all) to consume the product (of zero amount). If, on the other hand, a large product flows from a small capital investment, the propensity to save must be small in order that consumption shall expand sufficiently to consume the product of new investment ; if the multiplier has an insufficient value the investment will not be justified. If the multiplier decrees that a given investment shall increase consumption to the extent necessary to purchase the resultant products a stable advance is obtained. The less the product of a given investment the smaller, therefore, is the value of the multiplier necessary to justify the investment.

We are now in a position to indicate the sequence of events. Investment increases ; the multiplier ordains an increase in output and consumption ; the "capital ratio" determines whether investment is justified. If more than justified the relation ordains further investment, the multiplier further consumption, and so on. The turn comes when the expansion ordained by investment fails to justify that investment. The rate of increase of investment falls, while the propensity to save continues its restrictive effect, thus causing the rate of increase of consumption to fall. The relation ordains a fall in investment, the multiplier a contraction in consumption, and the economy moves into depression.[1]

There is some difficulty in reconciling the theory of the upturn of pp. 71-73 with that (summarised above) on pp. 90-95. In the earlier passage, the upturn commences when investment has to be increased (through plant renewal) in order that output

[1] What follows is a discussion of Mr. Harrod's explanation of the turn to depression. His explanation of how depression is broken to give way to recover is, in my opinion, rather less convincing.

may be maintained (not increased). Investment then increases and consumption expands, with an increase in saving and a reduction of stocks to make good any deficiency. The investment does not need to be justified by the increase in consumption ; it was justified had consumption not expanded at all. Subsequently the (rate of) increase of consumption sets the pace. Increased consumption and the fall in stocks justifying increased investment, increased investment promoting more consumption, each investment being justified not by the multiplier but by the circumstances in which it was conceived. On this view the turn comes when the rate of increase of consumption falls, causing investment to be reduced ; not when the rate of increase of investment falls, so causing the rate of increase of consumption to be reduced and hence causing investment to fall. On this view, the capital ratio influences the quantum of investment which is the response to increased consumption.

The treatment in the latter passage is in some respects unsatisfactory. There is the suggestion that the increase in output of consumers' goods flow from as well as if generated by the increment of capital. Surely this is unrealistic. Moreover, does not "non-justification" of investment imply a value of the multiplier lower than its exponents suggest ? In a given period there is a given investment and through the multiplier a given increase in consumption. That increased expenditure must be insufficient to purchase the products of investment at remunerative prices. And is it not likely that entrepreneurs, being guided in their investments by something more tangible than the imponderables of expansion, will find their more recent investments justified but at the expense of "unjustifying" some older investments which are their more immediate rivals ?

But these are purely incidental matters. The important matter is this : Associated with any income is a volume of saving, which can be utilised to finance investment occasioned and made profitable by growing consumption. If that volume of saving can be utilised that income level is possible ; if it cannot that income cannot be attained. One can imagine that investments which are made are always justified (or would be if repression did not supervene and were income levels merely

held), but that the rate at which consumption is expanding (and which gives opportunity for investment) is more and more easily provided for out of savings. What can be done with savings when consumption ceases to expand sufficiently, so that investment and output can be maintained ?

Essentially, Mr. Harrod's explanation of the impediment to recovery is the dearth of investment opportunities. In recovery investment is largely to the end of meeting the increased consumption of newly employed factors ; it is in *response* to increased demand. These incentives must eventually fail ; if it is to continue investment must take place without the help of the multiplier, creating its own increased demand by increasing aggregate income, but not in response to that increase. If investment is to continue at the requisite level, there must be adjustment from providing capital to re-employ workers and expand the economy by adding to it facsimiles of itself (with whatever help can be obtained from making each additional unit of output depend upon increasing amounts of capital equipment) to providing capital for the purpose of enabling each worker to work with more and expanding output only to the extent of the additions accruing from the service of the capital itself (*i.e.*, without the co-operation of other factors). Mr. Harrod denies the possibility of such an adjustment, for it demands the adoption of increasingly capitalistic methods of production, and as there is no economic force that can induce industry to adopt these methods—at any rate sufficiently quickly—the turn to depression is inevitable. This conclusion is based upon the opinions that industry is not sensitive to alterations in the rate of interest (relatively large reductions being necessary to induce the use of more capitalistic methods) and that the long term rate of interest is not susceptible to sharp variations, because present rates will be largely determined by people's expectations of future rates.

In my view these conclusions are open to serious criticism.

(1) Suppose that output can be expanded without the provision of new capital equipment in proportion to the additions made to the labour force. And suppose that the investments being made out of the increasing savings are in recovery being used

to provide increasing amounts of capital per head or new varieties of capital, recovery being necessary to energise this process—a psychological or technical catalyst. Then there is no readjustment to face when consumption ceases to expand for the first reason. It will continue to expand for the second, entailing, on Mr. Harrod's assumption, the use of an increasing proportion of total income for the purpose of increasing or lengthening the capital structure of the economy. The problem that is involved is that presented by an alteration in the nature of the catalyst[1]. If some savings are used for this process and others used for the purpose Mr. Harrod is considering, there will be *some* problem of readjustment. The first question, therefore, is one of fact—for what purpose are savings utilised in recovery? How serious is the readjustment that must eventually be faced? Consider the present position of the shipbuilding industry. The demand for mercantile vessels appears to be arising out of the advantages to be obtained from building more costly vessels (largely for technical reasons but partly, one imagines, because the rate of interest now is lower than when the vessels being replaced were built), partly because tonnage has been adapted to lower levels of world trade and needs building up (Mr. Harrod's reason), partly because this country is generously supplied with ships of 1917-20 vintages, and partly because there is an alteration in the kinds of tonnage required—specialist vessels being increasingly wanted. The first and the last sources of demand are evidently dependent upon the catalyst, and the technical source and the last source will probably give rise to the kind of disturbance (and need for readjustment) Schumpeter discussed.

Source 3 is a hang-over from previous cycles, which goes a good way to explain the timing of fluctuations in this particular industry. Source 2 appears to have made its force felt relatively late for the reason that much idle capacity did exist well into recovery. Clearly to answer this question for industry generally,

[1] There is little difficulty in the way of assuming that industry becomes more capitalistic in the course of recovery, for industry has not taken advantage of the low rates of interest of depression, only of the rates of the *previous* recovery. If, then, the secular trend of rates of interest is downward so that rates of interest in the current recovery are lower than in the previous recovery, increased capitalisation of the economy will be stimulated.

information is urgently needed. Without that information the extent of the readjustment to be faced must remain in doubt.

(2) In certain phases of the trade cycle it is clear that industry is insensitive to alterations in the long-term interest rate, notably in depression, and, as Mr. Harrod argues, it is probable that at any time industry will only respond to an appreciable alteration—of one half to one per cent. But it is not clear that at critical stages of the cycle an alteration of this magnitude will not produce pleasing responses—thus when industry is poised on the brink of relapse or is seeking inspiration to move forward. There is some danger in looking at rates of interest in relation to a given projected enterprise and in asking whether a one half per cent. reduction is going to make the difference between going forward and shelving the project. We ought, perhaps, to have more regard for the influence of the rate and the way in which a project will finally be accepted.

(3) Mr. Harrod writes: "We know *de facto* that the rate of interest does not behave in such a way as to secure steady advance, for steady advance is not achieved." But this proves nothing. In the past monetary policy has not had the end in view of eliminating the trade cycle. Monetary policy has helped, at any rate, to break booms and allowed depressions to gather force.

(4) It is surely unrealistic to assume, as, in conformity with Mr. Harrod's theory must be assumed, that a dearth of investment breaks the boom. It is surely typical of recovery that congestion occurs in the capital market and in the capital goods industries, that securities are sold to finance construction and equipment, and that bank advances expand, often "dangerously" in previous booms. Resources cannot be mobilised quickly enough to finance the investment projects maturing. This congestion, which can only be relieved with time, should surely allow the recovery period for the readjustment to be made. We may assume Mr. Harrod's incentive to investment to fail: there will be coming forward a sufficiency of projects from other sources to saturate the market for some time, for there will be the unsatisfied borrowers of previous months who can now be offered better terms. By the time these have been cleared away,

can it not be expected that the reduction in the rate of interest, combined with the better terms an easy capital market can now offer, will maintain investment at the required level? But, in fact, it would appear that the boom usually collapses before the possibility of readjustment has been put to the test.

(5) It is conceivable that in the future the market will be unable to maintain an equality between prospective investment and saving at acceptable rates of interest—because of a declining population, a compartmentalised world and, may be, a failure of inventive genius. But these factors were not present during the last century, although the trade cycle was. Is it conceivable that with so many opportunities knocking at the door and so flexible a market system to attract them to it, it was investment that failed us?

(6) Mr. Harrod asks whether the following behaviour of interest rates assumed to be necessary to maintain stability is likely to occur—" in the first three years 4 per cent., in the next three, 3 per cent., in the next three, 3½ per cent., in the next three, 2½ per cent., in the next three, 2 per cent., in the next three, 3½ per cent." Regarded in prospect it may appear unlikely, but, in general, I do not see why sharp alterations in the desired direction should not be possible. As Mr. Harrod says, alterations will be impossible if they are anticipated, and he points out that even more or less ignorant people attempt to take a view, *i.e.*, to anticipate changes. There is probably not very much in this. Markets are very much swayed by the anticipated results of discernible movements—not by the anticipated results of hypothetical movements. The market customarily values fairly the uncertainties inherent in a given situation, and the majority of investors accept the market ruling as a guide to their own decisions. Taking the above series, phases 3, 4 and 5, occurring seven to fifteen years hence, will have an entirely negligible effect upon investment now. The possibility of phase 2 occurring (and subsequently of phases 3, 4 and 5 in turn) must be highly problematical—as problematical as the possibility of the interest rate rising to 4 per cent. in 1938 and falling to 3 per cent. by 1941. If, on considering the present situation and what is inherent in it, a movement one way is as likely as a movement the other, 4 per

cent. will fit the bill; anticipation will remain a latent force, and an authority will have little difficulty in consolidating the market at the appropriate level. And being latent, anticipation will tend to crystallize into "views" as the situation develops. As these signs multiply, doubts come to be more common and more definite in form, and the market is capable of moving rapidly to a new position. Particularly if the authority helps it. When the authority is leading and confirming the opinion of a hesitating market, it can lead and help to establish sharp changes. When it attempts to run counter to sentiment, change may be more difficult to bring about. With this interpretation, anticipations would help and not hinder sharp alterations in the rate of interest. Moreover, under trade cyclical conditions Mr. Harrod's sequence (or at any rate the magnitude of changes) is not improbable, while if monetary policy is to be successful in ironing out fluctuations it will probably be unnecessary.

(7) As the accumulation of working capital plays a big part in recovery and its decumulation in depression, it is evident that the part which alterations in the short term rate of interest *could conceivably* play in easing readjustment would be very important indeed. But Mr. Harrod dismisses alterations in short term rates as of no importance. It is regrettable that on this important point we appear to get little further than assertion and counter assertion will take us, and it may be suggested that it is wise, if for some purposes unsatisfactory, to keep an open mind, remembering, however, that past experience of the effect of interest rates has been within the confines of cyclical disturbances and their concomitant price movements, and that it is not only the effect of interest rate alterations that must be noticed, but also of alterations in credit conditions.

(8) Thus the market has powerful weapons for encouraging investment which are by no means confined to alterations in interest rates *per se*, but which work through the new issue market, the stock exchange, and the money market.

Mr. Harrod's analysis is on occasion unduly formal. Thus, monetary policy is not given the dignity of a determinant—either of the first or of the second group. Presumably it must be conceived to have its influence through factor prices and the capital

ratio. Suppose that activity attains its maximum level by boom developing into inflation, then prices and the constitution of output are functions of monetary policy. Even at the present time the rate of advance is a function of monetary policy, the rise in prices a function of the rate of advance, factor prices a function of prices, the rate of advance a function of the movement of factor prices and so on. Moreover, the dynamic (second set of) determinants are influenced by monetary policy—the propensity to save is greater with a stringent credit policy, both for the large investor and the public company, the shift to profit, which is a function of the rate of advance, and the capital ratio which is a function of credit policy. There is something—credit policy—behind the facade of the determinants which is too important to be hidden.

The same kind of formally accurate statement with misleading implications and misleading conclusions is illustrated in the view that the shift to profit damps down fluctuations. "Again, companies making these swollen profits will distribute a smaller proportion in dividends, being reluctant to have to reduce their rate of dividends at a later stage, will tuck away substantial sums in reserve, or distribute bonus schemes, which the receivers regard as additions to their capital. The whole of the allocation to reserve is saved." "The greater the shift to profit, the smaller the increase in consumption entailed, in accordance with the multiplier, by the given increase of investment. . . . This is certainly a striking paradox, since high profit is usually supposed to be the signal for headlong advance. But the reasoning on which it is based seems to be irrefutable. . . . Moreover, it accords with the observed fact that a spectacular accumulation of profit occurs only in the late phase of the boom . . . That is a matter of common observation and frequent comment." The paradox is based upon the assumption that the undistributed profits are available to finance the given investment which occasions them. Suppose, however, they are in turn invested in the businesses which earn them—then a further shift to profit occurs and undistributed profits again increase. If all profits were put to reserve, and reserves were the sole source of saving, then the placing of profits to reserve

comes at once to be a stabiliser and an amplifier of fluctuations. For the more companies attempt to spend their reserves, the more would their profits have to increase. Finally, they would be defeated by the arithmetic of the saving and investment relation, but not before they made a gallant attempt which would hustle the economy into a boom. Surely this method of analysis and this emphasis springs from the view that investment is something rare and precious.

JACK STAFFORD

Reviews

Socialism: An Economic and Sociological Analysis. By Ludwig von Mises. (Jonathan Cape. 18s. net).

The Economic System in a Socialist State. By R. L. Hall. (Macmillan. 7s. 6d. net).

The original of the first of these volumes was published in 1922 under the title of *Die Gemeinwirtschaft.* As the volume now appears it is a translation from the second German edition (1932) with certain additions by the author and some changes in terminology. For making the work thus available to English readers the publishers—and especially the translator—are deserving of thanks in which, it may be assumed, even those who find their own views vigorously controverted in the volume will be ready to join. The ground of this assumption is that, if a case can be made against views earnestly held, it is well that it should be as thorough and powerful as can be, and the case here presented certainly complies with that condition.

The volume is a large one and, as the full title indicates, the author has not confined himself to the narrowly economic aspects of Socialism. In the result we are presented with a comprehensive contrast between what the social and economic order would be under Socialism and what this order would be and so far has been under what is regarded as its antithesis—Liberalism. Whether, in this country, even those who claim to be adherents of Liberalism would be prepared to accept the position in terms of such an antithesis must, one fears, be regarded as more than doubtful. Owing, presumably, to the presence or absence of certain qualities of mind, it is not easy for people in this country to conceive of a social and economic order as white or black, according as it satisfies or fails to satisfy the criterion of complete compliance with this or that set of abstract principles. Because of this consideration it might happen that some parts of this comprehensive indictment of Socialism will not receive all the attention which their importance demands.

One imagines, however, that particular attention will be given to Part II. of the volume which is headed "The Economics of a Socialist Community," and which will be generally recognised as containing the kernel of the indictment. Here the author lays down that the problem of economic calculation is the fundamental problem of Socialism, and contends that in a socialist economy this calculation would be impossible. Its operation requires the existence of a market economy in which demands are freely expressed in money prices and thus determine the direction of production. Under Socialism a market economy would cease to exist, and with it would go everything which at present gives guarantee of rational and economical production. For a working out of the line of argument here indicated, and for a penetrating criticism of the attempts to solve the problem of economic calculation in a socialist economy, Part II. of the volume ought to be read and pondered over both by those who are open to conviction and by those who are not.

As it happens the last remark can be appropriately repeated as regards the second volume under review, for it is concerned with just the same questions as Part II. of the first volume. As stated by the author, the subject of his volume is the theoretical "problem of choice between alternative uses of the limited resources by means of which we satisfy our economic needs" (*i.e.*, the problem of economic calculation) in a socialist economy. While the author is not prepared to accept the views of von Mises and others of the same school, he recognises that the problem is not easy of solution, and mentions that he has been impelled to write by his conviction that socialists have not given sufficient thought to the conditions that will have to obtain in a socialist economy if it is to work efficiently.

Actually, although the author does not make the division, his volume divides itself into two nearly equal parts. The first part contains a just and clear statement of how a competitive economic system seeks to solve the economic problem and of the divergencies between the ideal and the actual solution. Then follows a statement of the kind of solution that Socialism would seek, accepting that it must embrace a system of prices which will ensure that, at the prices charged, the market will be

cleared of goods, and that these prices will also represent their cost to the community as expressed in other goods which might have been produced instead. It will be evident, therefore, that the author does squarely face the problem of economic calculation.

The second part of the volume is concerned with the large question of the organisation and methods required for the successful working out of the socialist solution. Here a Ministry of Production is visualised, immune from political pressure except in matters of general policy, but with a free hand in details of organisation. This Ministry would be staffed by men of the type at present found in the administrative grade of the Civil Service, while those responsible for the actual working of the producing units would be similar to the present-day managers of capitalist concerns. For detailed information of the methods whereby the aims of Socialism would be achieved reference must be made to the volume itself. All that can be said here is that it does not appear that, at bottom, these methods would be very different from those which must necessarily operate in a less obtrusive way in the existing economic system. As a calm discussion on the possibility of solving the central problem of a socialist economy the volume is to be commended. Even though everyone might not agree that it contains the last word in that discussion, everyone might well agree that it will serve an extremely useful purpose in its emphasis on the fact that there exists such a problem for discussion.

G. W. Daniels

Family Expenditure. By R. G. D. Allen and A. L. Bowley. (P. S. King. Pp. 145. 9s. net.)

During the last ten years three important collections of family budgets have been made in this country—one in 1926 for clerks in English towns, the second for wage-earners in Merseyside in 1929 and the third, of which details are given for the first time in this book, for a miscellaneous group of families in 1932,

obtained in connection with Sir William Beveridge's *Enquiry into Family Life*. Although the total number of budgets collected by these three enquiries does not exceed 400, it has been obvious for some time that their detailed examination item by item in absolute amount and as proportions of total expenditure (especially when compared with the pre-war enquiries in the cost of living of working class families made by the Board of Trade and with the investigations in other countries since the war), would give the first real opportunity of discovering how far the expenditure of families could be safely described by general rules and formulae. Further, such relations as shown by statistical analysis could be used to test the assumptions of economic theory regarding the behaviour of consumers. To this task Mr. Allen and Professor Bowley have brought the skilled technique of statisticians and economists and their results make this one of the most important books which have been published on this subject.

Part I deals with the average expenditure of groups of families on different articles of consumption—food, fuel and light, furniture, etc.—analysed mainly according to total family expenditure. This analysis is carried further in Part II where the dispersion of family expenditure is measured by coefficients of variation and the extent of the correlation of the expenditure on different items is tested by partial regression coefficients. In both Part I and Part II the material used is obtained from family budget enquiries in the United Kingdom and foreign countries and the treatment is mainly statistical. In Part III and the Appendix, however, the treatment is mathematical and is concerned with a theoretical analysis of the distribution of expenditure. This part is a further development of the work by Mr. Hicks and Mr. Allen on inter-dependence of goods published in Economica in 1934.

A family is not a precise statistical unit and expenditure varies in part with the needs of members of the family due to differences in the number, age, sex and earning power. To eliminate the effect of needs on variations in family expenditure the authors used two methods—partial regression, where expenditure is common to the family as a whole (as in the case of

rent, and fuel and light), and estimating the number of equivalent adults where expenditure is special to individual members of the family (as for foodstuffs). Even with the first method they suggest it might be advisable not to count each individual as a unit but to take a number based on a scale of needs in which allowance is made for age and sex. Many such scales of estimating the number of equivalent adults have been devised, but the reader is left somewhat in doubt as to the details of the methods Mr. Allen and Professor Bowley have adopted or whether the same scale of equivalents has been used for expenditure on different kinds of foodstuffs. They do, however, state (p. 20) " it is not necessary to discuss the scales in detail here since the various scales appear to give nearly the same results in the present study and since, in any case, the scales have usually been chosen and used in the reports of the budget collections on which we draw."

The statistical material used relates to different dates and comparison of changes in consumption in relation to income over a period of time, cannot be attempted. The authors are mainly concerned with measuring the relation between expenditure on different items of consumption and total family expenditure at each date. Total expenditure rather than total income is presumably taken as a basis of comparison because of the absence of reliable figures of savings. Some of the budget enquiries relate only to one week and others to a month or more and this affects to some extent comparison from one enquiry to another of the expenditure on different articles of consumption.

Enough has been said to indicate the merits of this book. It should be added perhaps that a knowledge of elementary statistical method is needed to follow the argument of Parts I and II. The theoretical analysis of Part III should not present any great difficulties to those familiar with recent work in mathematical economics. While the appeal of this book is mainly to the professional economist and statistician, it would be a mistake to give the impression that the book is only of specialised interest ; it deserves to be widely read.

H. Campion

Economists and the Public. By W. H. Hutt. (Jonathan Cape. Pp. 377. 15s.)

In this work Professor Hutt develops a most interesting thesis. He considers that the competitive and (individualistic) economic system has been criticized, both by thinkers of established reputation in other fields and by the "common man," on the basis of fallacious premises and through the support of erroneous argument. Thus, p. 41, Bertrand Russell is quoted as being of the opinion that the competitive system prevents an "immensely enhanced productivity of labour," and business men, trade unionists and others are alleged to see in forces that injure themselves anti-social (wealth-destroying) manifestations of the competitive system. Moreover competition is often considered to breed inequity; it is considered to allow the inequalities that result from the building of large fortunes, or, alternatively, by those who have some position to defend, it is considered to be too great a levelling force that prevents an equitable return from being obtained.

In practice then, competition has been curtailed by a continuous struggle for private advantage and has been held up to opprobrium as the instrument of a "philosophy of grab." Politicians have helped in this work by their appeal to sectional interests, which are almost always against free play for competitive forces. Even the support given to Free Trade comes most strongly from those whom it obviously benefits.

As a consequence orthodox economics has lost prestige, for it has pointed out advantages of competition which have been denied, and has insisted upon the divergence between public and private interests. The economist has then been ridiculed, vilified and ignored. Professor Hutt suggests that the honesty of the economist has consequently suffered. He has shrunk from losing the sympathy of those whom he most wants to help, and has, as a result, lent his support to causes his reason should have led him to oppose, advancing arguments which fail to stand examination (e.g., the support of the Trade Union movement and the argument that labour is a perishable

commodity, etc.). Or, alternatively, he has abandoned the world of realities to lose himself in undisturbed mental gymnastics.

But it is evident that economists have an important social function to perform in discussing and analysing the form of economic organisation, suggesting possible remedies for weakness, and illuminating the less obvious working of socio-economic forces. The economic system needs viewing in the light of reason, and it is for economists to provide the reason. To this end, Professor Hutt urges that economists should buttress (or recover) their authority, particularly by renouncing political and business interests, by avoiding speculation and, positively, by establishing an authoritative journal in which the select coterie should strive to attain harmony of opinion.

Professor Hutt outlines what he considers to be the remedy for the difficulties he has traced, and to which, one imagines, economists should influence policy. He defends " competition " on the ground that liberty is good, that liberty implies restraints that are impersonal and impartial, and that, in the economic sphere, impersonality and impartiality are to be found under competitive conditions where the consumer is sovereign. Yet the inequality which at present causes concern would still be a difficulty under competitive conditions and would prevent the acceptance of the notion of consumers' sovereignty. Thus inequalities of the past would be difficult to eradicate and would not be justified under the new conditions, while inequalities would arise even were a determined effort made to attain equality of opportunity (as consumers' sovereignty would require), ultimately to destroy that desideratum. Moreover, it is suggested, even were this not so, society would not countenance the economic game being played with dice loaded in the favour of the beneficiaries of the fortunate and the adroit. Hence, inheritance must be abolished, and Professor Hutt attempts to show that this would not be in conflict with his basic principle of liberty.

It will be seen that this is an attempt to extend the logic of the market system into a social principle. As such there are a number of academic criticisms which can be made against this

academic exercise. Notably, the content of the term competition demands attention. Is competition, in the narrow sense, an acceptable foundation for an economic system; would it lead to an accounting system that could be accepted by rationalists; and, if not, what kind of competitive system should we seek and what interpretation should we give to consumers' sovereignty? Professor Hutt has given so much that it is unreasonable to complain that he has left this question unanswered, but an answer is required before discussion can be carried further. Secondly, the argument concerning inheritance cannot, it would appear, be decided on logical grounds, but only, as Professor Hutt is driven to admit, on grounds of expediency; nor, despite an attempt, does he settle the place which family life should fill in his system. That again cannot be decided logically.

When one views this work as a basis for policy one is aware of much graver doubts. Can "power thought" and "custom thought" be exorcised by naming them? Can the power of reason through the voice of economists make itself felt in the tangled skein of forces whose resultant determines the direction in which we move? Can competition be maintained in an economy which appears, for whatever reason, to be moving away from its influence? Would competition not demand such a system of checks as to make its operation complex to a degree? Will it be possible to buy out "monopolistic" interests knowing them to be anti-social, and will it be possible to eradicate them and preserve the goal of reason at the same time? Is not there implied a view of society and an understanding of its progress too simple to be of much service in such difficult times? Despite these reservations warm praise should be given to Professor Hutt. No one will read this book without reflecting upon questions of grave social moment which tend to be forgotten in the difficulties of the present and the support of ends, perhaps, too easily accepted.

JACK STAFFORD

Kapitalbildung. By J. Marschak and W. Lederer. (London : William Hodge. 1936. Pp. 315. 10s. 6d. net.)

In the greater part of this publication Dr. Lederer deals with the empirical problem of ascertaining the " capital formation in six important countries during 1925-1930." This statistical part is preceded by Dr. Marschak's more theoretical chapter on the " main elements of capital economy," which does not claim to give a complete causal explanation of the capital market but to provide a thorough description of the logical interaction of principles, general conception and theoretical working hypotheses.

The notions of " capital " and " capital formation," relevant for statistical purposes, are contrasted in the theoretical part with the wider notions of " wealth " and " investment." Following a careful examination of the constituent elements of wealth, Dr. Marschak points out that its value depends on the anticipation of future uses to be derived from the existing stock of property and claims as well as on the anticipation of future interest rates. Thus two approaches emerge pending on the decision as to whether " uses " are considered to be attached to a particular object of wealth (i.e., material approach) or to be derived from one or more objects of wealth by one individual person (i.e., personal approach).

" Use " in the sense of Dr. Marschak's material approach comprises the gross yields of property or claims : the annual gross rent of a house, the annual sales value of a commodity stock, or the interest payment and redemption of a claim. The sum of discounted future gross yields constitutes the value of property or claims respectively. Under net yield of wealth Dr. Marschak understands its interest bearing at present rates of interest. The difference between gross and net yield is called depreciation and redemption.

Values, which enter into the consumption of wealth owners, signify "uses" in the sense of the personal approach. Wealth in this sense is calculated as the sum of discounted values to be consumed in future. The full amount of the interest bearing

of wealth at the present rates of interest represents the proprietor's income. So that the (negative or positive) difference between consumption and income constitutes the (positive or negative) amount of saving. Thus either approach leads to parallel conceptions ; net yield and income ; gross yield and consumption ; depreciation and (negative) saving.

Though both approaches lead necessarily to identical results as regards the " growth of wealth " or " investment " the constituent elements are not the same. The difference between wealth at the beginning and the end of a definite time interval having regard to only one and the same point of evaluation, is called investment. What Dr. Marschak denotes as " prospective investment " is to mean the anticipation of changes in wealth over that interval on the basis of prices which prevail at the beginning of the period. " Retrospective investment " is no longer an anticipated but an experienced change of wealth to be compared with the wealth value at the beginning of the period corrected by prices which prevail at the end of the period. Dr. Marschak makes a distinction in the same way between anticipated " prospective uses and prospective interest rates " and realised " retrospective uses and retrospective interest rates." Thus he arrives at " prospective income " by multiplying the amount of interest bearing wealth estimated at the beginning of the period with the prospective rate of interest while " retrospective income " equals the amount of interest bearing wealth estimated at the end of the period multiplied by retrospective rates of interest. The difference between " retrospective " and " prospective income " is called dynamic gain or loss. Whether retrospective or prospective considerations are applied empirically depends entirely on the quality of available statistical information. As income tax is assessed at the end of a period the actual amount of income seems to correspond to Dr. Marschak's notion of retrospective income, which therefore includes what he calls dynamic losses or gains. Retrospective investment, of course, characterises the same magnitude as the notion saving, if by the latter is meant that part of retrospective income which is not consumed.

In his international survey of the actual capital formation during the years 1925-30, Dr. Lederer is anxious to suggest and discuss methods of measurement rather than to claim precision of his statistical results. The countries under consideration are United States, Great Britain, France, Germany, Holland and Switzerland. In accordance with Dr. Marschak's distinction between the personal and material approach, Dr. Lederer endeavours to determine for each country the " money capital formation " and the " real capital formation " respectively. For reasons of time lags in the application of either method the statistical results are not strictly comparable. But each method in itself encounters certain limitations of validity. The increase or decrease of the stock of short term real capital can be ascertained with some degree of exactness by measuring the number of commodity transactions. While the increase of long term real capital may be measured by adequate sales figures, the decrease unfortunately depends on the arbitrary determination of rates of depreciation. The material method for that reason is likely to be of limited validity. Under " money capital formation " Dr. Lederer understands the increase in the total stock of claims, which is accompanied by an increase in the stock of real capital. In order to achieve approximate identity with real capital formation he has to include under money capital that part of undistributed profits which served to finance new investments (*Selbstfinanzierung*). Estimates of this item are bound to represent the chief source of statistical error. Wherever Dr. Lederer has to make use of statistical information and estimates as presented by the *Institut für Kunjunkturforschung*, by Kuznets, Colin Clark and others, he carefully points out his own revisions and clearly indicates the limitations of the validity of his results.

Clearness of exposition and painstaking scrutiny in the selection of data are outstanding features of this publication. Economists and statisticians alike will be highly indebted to the authors for having provided for the first time a comparison of capital formation in various countries. The book is written in German. It is to be hoped that an English translation will soon be forthcoming.

H. HILLMANN

Markets and Men. By J. W. F. Rowe. (Cambridge University Press. Pp. 259. 7s. 6d.)

It is perhaps inevitable that a book written for popular consumption should leave the economist to some extent unsatisfied, and although Mr. Rowe has put us all in his debt with an extremely readable and lucid account of the post-war control schemes in certain raw materials, the ground covered is necessarily restricted to the more important and obvious problems.

After an introductory chapter in which it is shown that the schemes are not revolutionary but evolutionary, and the factors which have resulted in their present importance are outlined, there are chapters dealing in detail with the measures of control adopted in six of the primary industries. Each of these follows the same general plan—a short account of the economic and technical factors involved, a description of the events leading to the imposition of control, an outline of the actual scheme, and finally a critical appraisement of the results.

Two misprints should be noted; on p. 116 it is stated that United States cotton growers in 1934 received compensation to the amount of "100,000 dollars, or say £20 million," while the argument (on p. 146) relative to the size of stocks also suffers rather badly. These, however, are details; even the general reader will guess that the United States Government deals in hundreds of millions of dollars. The purpose of these chapters is to supply data for the analysis which follows, and this they do admirably, being models of concise description, even though the criticism of the particular schemes could at points be stronger.

The general analysis is introduced by a chapter showing that the troubles which give rise to the schemes is not a question of declining demand, but one of improving technique, coupled with economic nationalism. Few would dispute this, while the analysis which follows has already been made familiar ground by Mr. Rowe's previous writings. Control schemes are described in relation to world prosperity and world depression, the general conclusions being that schemes are sound both in depression and prosperity when the decline in demand is temporary if there

is little obsolescent capacity, but are unjustifiable when the decline in demand is permanent or when technical progress is rapid. In the latter case, however, schemes may be useful during depression as tiding over a period in which readjustment presents the maximum of difficulty. Finally, control cannot be a cure for over-capacity, except in the unlikely case of technique being stationary. The chief gap here seems to be a lack of any precise definition of what is and what is not "economically sound," and because of this the analysis loses some of its force. It is, however, clearly shown that restriction is not "a panacea for all ills, to be applied indiscriminately in all ways which offer a momentary advantage" (p. 218), and that "there is no clear-cut issue between artificial or conscious control and so-called *laissez-faire*" (p. 253). A final chapter analyses the case for valorisation schemes both for single crops and for crop cycles, the conclusion being largely one that there is a case for experiment.

When the field treated is so broad, it is easy to point to gaps. Perhaps the difficulties involved in developing a technique of control could have received more mention, while discussions of the relations of governments to control schemes might have gained by the inclusion of more concrete illustration. Further, although Mr. Rowe has the consumer always in the background, he largely keeps him there, bringing him into prominence only on occasion. There is much to be said for viewing the problems of the primary industries as problems of producers' incomes; but the history of some of the schemes, and present-day tendencies in other fields, give strong reasons for keeping the consumer in the foreground of the argument.

When, however, so much is presented within the framework of a series of broadcast talks, and as so clear an account of the essentials of a problem which causes so much trouble to the man in the street is given, it is unreasonable to ask that more should have been included. Perhaps, in spite of the difficulties which he mentions, Mr. Rowe will follow this "interim report" with a fuller analysis, and so put the economist under as great an obligation as he has the layman.

S. R. Dennison

The Ethics of Competition and other Essays. By FRANK H. KNIGHT. (Allen and Unwin. Pp. 363 12s. 6d.).

THIS book comprises a collection of Professor Knight's articles and addresses published in this form on the initiative of a small group of friends and colleagues. There could be no more appropriate tribute to their author than this which makes accessible work of lasting quality that has been done during a decade and a half. Most of these articles are well known and well appreciated, as, for example, *The Ethics of Competition*, which gives the title to the collection, or the essay on Interest, which is here reprinted from *The Encyclopaedia of the Social Sciences.*

It follows that the interest of the reader, as of the present reviewer, may well centre upon the hitherto unpublished *Economic Theory and Nationalism*—an address given in December, 1934, before the American Economic Association. This is a long essay of over eighty pages—a space which is still inadequate to develop full and clearly the line of thought pursued. Professor Knight attempts to discover the reasons underlying the general retreat from individualistic economy and its concomitant democracy, and finds it in the insecure basis on which they rested in the last century. He considers the appeal made by democratic Socialism, and finds that the frailties of human nature which detract from the appeal of present organisation present much the same difficulties as under the other system in which freedom is present. He unhappily concludes that Fascist-Nationalist organisation offers something of which human nature is in need—unity, leadership and (in a special sense) security.

Professor Knight considers that the maintenance of social organisation under conditions "of voluntary and intelligent consensus" and of an economic system appropriate to such organisation presents difficulties which are seldom squarely faced. He argues that "conservatism" is essential, that the end of maintaining social coherence must take precedence over the end of "reform" or "change," and that the most important problem to be solved—though he says little about its solution—

is that of leadership. At a time when we are acutely conscious of the possibility of change, more or less "radical," when social unity is so much disturbed by the rivalry of different sections of communities, and when political leaders have so much to gain by an appeal to emotions, it is easy enough to share Professor Knight's apparent distrust of the future, and difficult to share even his qualified optimism on the part that may be played in society by the social scientists. These very inadequate comments may serve to indicate that this essay alone is amply sufficient reason for the publication of this volume.

JACK STAFFORD

Cabinet Government. By W. IVOR JENNINGS. (Cambridge University Press. Pp. ix. and 484. 21s.)

THIS scholarly work of Dr. Jennings fills a gap which has remained too long in our literature of the British constitution. As the title indicates, Dr. Jennings is concerned with government in the sense of "His Majesty's Government," or what, broadly speaking, may be termed the executive. It was to be expected, in view of the Cabinet's central position, that a study of it involves a study of the whole of the constitution. Thus the relations of the Cabinet with the House of Commons and House of Lords, the functions of the Opposition and party programmes all find their place, though, if only as a means of keeping the book within manageable limits, Dr. Jennings has been wise in devoting less space to these aspects. Furthermore, in so far as the Cabinet is engaged in actual administration, some consideration must be given to the relations between the Minister and the Civil Servant, to inter-departmental relations and to Treasury Control. These chapters, along with a chapter dealing with the different types of government departments, boards and commissions, and another on Cabinet committees are among the most interesting in the book and a real contribution to the study of central administration. The major portion of the book, however, is devoted to a detailed examination of the British Cabinet, the author ably dealing with such questions as the

position of the Prime Minister, the formation of a government and constitutional monarchy.

Throughout the book Dr. Jennings pays very close attention to the precedents and facts revealed in memoirs, biographies and Hansard. There will be many, no doubt, who will dislike this "card index method" and will prefer the broad generalisations of a Bagehot. And certainly the aphorisms of Bagehot are more pleasant reading than the facts of Jennings, nothwithstanding the latter's lucid style. But several points must be considered which are in Dr. Jennings' favour. First, the generalisations of past writers have sometimes been misleadingly simple. Second, Dr. Jennings goes into far more of the small but nevertheless important points. Finally, the book is not merely an exposition of the present position of the Cabinet system in this country, but is a history of the British constitution since 1832. With a lawyer's outlook Dr. Jennings has substituted for the non-existent case law a study of the precedents, some of which may or may not be important enough to be called conventions.

The last point indicates clearly the difficulty that besets the writer on the constitution—the difficulty of keeping pace with the changes. Some of these changes may be fairly obvious, such as the various Reform Acts ; others may be very subtle, evidences of a slowly changing outlook, or even a change in the personalities running the government. The problem is the relation of history to the present situation. We are hardly likely to believe that the precedents of 1836 are wholly true to-day, but can we even assume that the precedents of 1930 are true in 1937 ? But this difficulty is not the fault of Dr. Jennings, who has painted a picture from the material at his disposal and has gathered much information not hitherto available. Dr. Jennings has given us a realistic study of the British constitution and we owe a great debt to his industry.

D. N. Chester

The Institution of Property. By C. Reinold Noyes. (New York and Toronto: Longmans, Green & Co. London: Humphrey Milford. 1936. Pp. xiv. +645. 25s.).

It may, perhaps, seem ungenerous for an English reviewer to criticise the pseudo-scientific style of the American economist who has produced a work full of such undoubted scholarship as this. But the English reader should certainly be warned; for to enjoy Mr. Noyes' treatise as it deserves to be enjoyed he must first prepare himself for the difficult task of mastering Mr. Noyes' style, which is unhappily jerky, involved, and at times almost obscure.

Having overcome this obstacle, the reader who is a student of economics and jurisprudence will find in this work, whether he agrees with the author or not, much that is both interesting and stimulating. Mr. Noyes seeks to show that legal theory in relation to property has not kept pace with economic development, or as he puts it (p. 413), the rules and view-points of the law clash with economic facts and even modern legal theories clash with the legal facts. The lawyer will, of course, bristle at the distinction between legal facts and economic facts, a distinction further emphasized by such statements as this p. 431, note 9: ". . . Many writers come near to substituting the facts of law for the facts of economic life. But in reality law does not determine economic life. It trails along behind the developments in this field, endeavouring to interpret and codify developed customs. The social phenomenon, the thing that is, develops apart from the law; continues to exist apart from it; is only gradually apprehended by the law and then after the fact; and is never more than sanctioned, defined and supported by the law." But it is because the author's thesis is so controversial that the economist and the jurist, if not the practical lawyer, will find so much to interest them.

Mr. Noyes attributes the clash between legal theory and economic fact to the "fact" that Roman Law has supplied only a small part of the modern law and practically all the modern theory; and the English Feudal Law of Property has supplied the greater part of the law but little of the theory. He therefore

deals at some length (pp. 27-284) with the conception of property in Roman and English Medieval Law, before proceeding to consider (pp. 285-537) the Modern Juristic Analysis of Property, *i.e.*, the legal theory, followed by an outline of Property in Modern American Law, *i.e.*, the legal practice. Again, one does not wish to appear ungenerous to a scholar of Mr. Noyes' stature, but if, as this present reviewer assumes, the author's main thesis is that the law to-day still trails behind the developments of modern economic life, it seems that it was hardly necessary to deal at such length with the Roman and English Medieval systems of law. One cannot, in any event, imagine a reader not already well acquainted with English Medieval Law acquiring any great understanding of our Feudal System from the author's outline of it. Mr. Noyes, in other words, assumes a certain ready knowledge of legal history on the part of his readers ; it seems a pity that he did not assume a greater knowledge. He might then have concentrated on his analysis of the modern position and perhaps have given us also his views upon the 1925 Property Legislation in this country and the substitution of the new conception of "estate ownership" for the feudal theory of tenure.

Let it not be thought that these criticisms are made in any carping spirit. In spite of what has been said, this is a work of tremendous scholarship and one which can be heartily recommended for serious perusal. But Mr. Noyes is seeking to break into new and controversial ground, and must face the inevitable criticism. To the lawyer the only facts are legal facts ; the only property is that which exists in the contemplation of the law. To the lawyer, therefore, there is danger in Mr. Noyes' thesis ; he may be seeking to bring the law and legal theory not into conformity with the facts, but into conformity with economic theories. In Mr. Noyes' own words (p. 17) : "So long as the literature of economics is even in part inspired by, or pervaded with, the wishes of the observer and expresses what he thinks should be rather than what he finds to be, it will remain a war of words—not a science." This work (p. 16) "suffers from the difficulties which are inherent in a new angle

of approach to any subject, and . . . reflects the disadvantages —as well . . . as the advantages—which result when one who is not a specialist in a particular field attempts to elucidate that field for the benefit of others also strange to it."

DAVID BLANK

An Introduction to Economic Analysis and Policy. By J. E. MEADE. (Oxford. Pp. 392. 10s.)

THE purpose of this work is to introduce the reader to the corpus of economic theory in a novel manner—broadly by considering the various economic problems that perplex us and by indicating the assistance which economic analysis can give in leading us towards appropriate solutions. In turn, Mr. Meade considers problems of unemployment, monopoly and "imperfect competition," the inequality of incomes, problems concerning the supply of factors of production (*e.g.*, saving), and such international problems as those arising from exchange relationships, migration, and the freedom or otherwise of markets.

In analysis and in suggesting solutions, full use is made of recent developments in economic technique, particularly of those which are associated with the economics of imperfect competition and the "multiplier." One should mention that Mr. Meade presents a notably clear account—one which should be most valuable to students—of what equilibrium under conditions of imperfect competition implies. The analysis of unemployment (on the lines of Mr. Keynes' recent work) and the presentation of the theory of the multiplier are also models of lucidity. The treatment of the remaining problems suffers in comparison. In part this may be because the analytical method employed have not the same novelty, and partly because the problems studied are, for different reasons, of less interest. But, in the case of the last section, on international problems, it is the result of rather inadequate treatment. *The Economic Causes of War* are considered in the short space of seven pages. What Mr. Meade does say is, however, to the point and instructive.

The analysis of each problem suggests that the State can provide a remedy. Thus public works, state management and control of industry, authoritarian distribution of income, public provision of savings, tentatively, the state influencing of population and control of foreign exchanges are in turn suggested.

Combined in this work are criticism of the present economy, a suggested policy of bureaucratic control, the argument supporting that control, and the assumptions on which both the criticism is made and the control suggested. This is a most useful combination which should interest the reader and encourage him.

JACK STAFFORD

Graphic Methods for Presenting Business Statistics. By J. R. RIGGLEMAN. (McGraw Hill).

MR. RIGGLEMAN has written an invaluable guide, well illustrated with admirable examples of right and wrong ways of chart-making, for those who have to present economic statistics in simple and vivid forms for general publication or for business use. Many of the rules he lays down will be familiar enough and some may seem almost too obvious to be worth putting down in black and white. Yet observation suggests that too few of those who design charts and diagrams have understood the first principles of the art.

Mr. Riggleman confines his attention to graphical methods and makes no attempt to deal with the principles governing the selection and treatment of the statistical raw material. This to some extents limits the scope of his discussion of the graphical principles ; the graphical analysis of time series, in particular, requires a fuller treatment of the mathematical methods of analysis. He emphasizes, however, the usefulness and essential simplicity of the ratio scale. In America, it appears, the business man now "appreciates the importance and recognises the simplicity" of the "semi-logarithmic" chart ; it is doubtful

whether the same could be said of the British business man. Mr. Riggleman rightly attaches great weight to the purely technical aspects of chart designing, to the importance of clear and unobtrusive guide-lines, and to the value of good lettering. A useful chapter deals with methods of photographic reproduction, and an appendix with the technique of drawing and lettering.

There is a short discussion of the pictorial methods of presenting statistics which have been popularised by Dr. Neurath, methods which can produce very beautiful and very significant results, but which can be seriously abused by the careless statistician or the unscrupulous publicity agent. Mr. Riggleman also describes, with originality and suggestiveness, methods of making statistical maps.

The author suggests that "an international agreement should be arrived at between the Royal Statistical Society, the American Statistical Association and other organisations" to settle the perennial problem of whether the vertical line on a chart representing the beginning of a year should carry the figures for January of that year or for December of the preceding year. Many problems confronting the Council of the League at Geneva could probably be settled less acrimoniously.

C. T. SAUNDERS

Mr. Keynes and The Labour Movement. By A. L. ROWSE. (Macmillan. 2s. 6d. net).

In writing this small book—or pamphlet as it is described—the author aims either at inducing the Labour Movement to accept the latest teaching of Mr. Keynes as the intellectual basis of its policy, or at showing that, in this teaching, this policy has been provided with an intellectual basis. Along with the familiar device of eulogising the hero, partly by disparaging the acumen of his predecessors and contemporaries, the method adopted is the equally familiar one of selecting

appropriate passages, with such comments on them as will best serve the end in view—a method to which Mr. Keynes' writings admirably lend themselves.

Whether, at this stage, the Labour Movement would be well advised to commit itself as far as Mr. Rowse has committed himself may be a matter of doubt, but this cannot alter the fact that he has written a lively and entertaining pamphlet.

G. W. Daniels

The Economics of Transport. By M. R. Bonavia. (Nisbet and Cambridge University Press. Pp. 202+x. 5s.)

In this book, which is the ninth of the Cambridge Economic Handbooks, Mr. Bonavia undertakes a rather difficult task. If the title of the book is not to be misleading, he must deal with all branches of transport. But in the sense of descriptive or even applied economics, the writer is clearly under the obligation to indicate not only the characteristics common to all types of transport but also the differences between the different types. In undertaking this task Mr. Bonavia starts with the heavy liability of being confined to about 200 pages. This may account for the fact that he confines his attention mainly to the railways, shipping being a good second, with road transport a long way behind. In his chapter, *The Means* of *Transport*, he must necessarily deal with each type, but in the more general chapters on Organisation, Competition and Monopoly, his examples are mainly drawn from the railways. This is unfortunate if only in view of the fact that the last chapter is devoted to the problems of control and co-ordination. This chapter would probably have been more useful to the student could it have drawn together the similarities of, and the differences between, the different forms of transport (only some of which are at present revealed in the earlier chapters) along with some discussion as to how these might usefully be reconciled in some co-ordinated system.

Though Mr. Bonavia's interest in railways causes him to give more space to certain examples than is necessary, for example, he devotes nearly nine pages to the Railways Act, 1921, but hardly a page to the Road Traffic Act, 1930, he cannot be accused of being biased in favour of this form of transport. Thus he points out that until competition came from road operators, certain railways were apt to cut costs by providing inadequate services. Also he considers that the road transport industry now covers practically all its social costs and has passed "from the adolescent to the adult stage."

On the whole the book is a useful, if not an inspired, addition to the growing literature on transport. Mr. Bonavia has an eye for the entertaining example which should help the student to remember the underlying principle. He is careful in his facts, except when he says that a municipal tramway undertaking may charge the maintenance of the road space between the rails to the road fund. As an introductory text-book it should stimulate the student to wider reading, and in view of this a select bibliography might usefully have been added.

D. N. Chester

An Essay on Government. By James Mill. (Cambridge University Press. 3s. 6d. net.)

This essay, now published with an informative introduction by Professor Ernest Barker, was completed in 1820 as an article for the Supplement to the fifth edition of the *Encyclopaedia Britannica*. At the behest of some of Mill's friends it was soon reprinted, and, in the words of Professor Barker, " rapidly became the classical statement of the political theory of the Benthamites " and " helped to precipitate opinion in the dozen years which preceded the passing of the first Reform Bill in 1832."

The argument of the essay was, of course, for representative government, its conclusions being arrived at by what, in later days, James Mill's son called the geometrical method. Starting

with the Benthamite view that men's actions are always determined by their interests, the parent insisted that, in an appropriate system of government, individual and class interests must be subjugated to general interests, and that this system must be one controlled by a democratic suffrage.

At the time, the basis and method of the argument did not pass without severe criticism even from friends of reform and, at the present day, it is certain that most of those who still believe in the virtues of representative government would be found among the critics. Even so, it would be erroneous for anyone to suppose that, in 1937, the interest of the essay is purely historical. Unfortunately, there are far too many remarks in the essay with present relevance to allow of its being thus dismissed.

G. W. Daniels

Other New Books

Armstrong (W. E.) *Saving and Investment.* (Routledge. Pp. 270. 12s. 6d.)

Cassel (Gustav). *On Quantitative Thinking in Economics.* (Oxford: Humphrey Milford. Pp. 181. 6s.)

Clark (Colin). *National Income and Outlay.* (Macmillan. Pp. 304. 12s. 6d.)

Hawtrey (R. G.) *Capital and Employment.* (Longmans, Green. Pp. 348. 15s.)

Jones (D. Caradog). *Trade Revival in a Depressed Area.* (University Press, Liverpool. Pp. 72. 2s. 6d.)

Lucas (Arthur F.) *Industrial Reconstruction and the Control of Competition.* (Longmans, Green. Pp. 384. 15s.)

Sayers (R. S.) *Bank of England Operations, 1890-1914.* (King. Pp. 142. 6s.)

The Social Productivity of Technical Improvements

I

In the famous chapter on "Divergences between Marginal Social Net Product and Marginal Private Net Product" in his "Economics of Welfare," Professor Pigou calls attention to a "somewhat specious fallacy." [1] "Some writers unaccustomed to mathematical analysis have imagined that, when improved methods of producing some commodities are introduced, the value of the marginal social net product of the resources invested in developing these methods is less than the value of the marginal private net product, because there is not included in the latter any allowance for the depreciation which the improvement causes in the value of existing plant . . ." Such a divergence can, however, not arise in his view, because "whatever loss the old producers suffer through a reduction in the price of their products is balanced by the gain which the reduction confers upon the purchasers of these products. This is obvious if, after the new investment has been made, the old machines continue to produce the same output as before at reduced prices." But Professor Pigou tries to prove that this even holds true in the more extreme case when the output of the old machinery has to be reduced or even completely abandoned under the superior competition of the new. For this happens only when the new machinery reduces the *total costs* of production below the *prime costs* involved in running the old machinery so that, in the form of price reductions (or additional profits), the whole of the former net receipts of the old producers is now transferred to the consumers (or the new producers).

The conclusion is obvious. If Professor Pigou's analysis exhausts the problem another strong argument stands against the application of the various measures such as tariffs, monopolies, discriminating credit policy, not to mention investment planning, which try to protect invested capital against technical

[1] The Economics of Welfare, 4th ed., pp. 188-189.

obsolescence. By postponing, and even preventing, the application of the most efficient methods, they do not favour any but sectional interests at the expense of the real income of the economy as a whole.[1]

The main objections which have been raised against this line of argument in recent years may be classified under two headings.

(1) There is, first of all, a long term dynamic view which has been stressed by Professor Pigou himself.[2] Frequent cases of obsolescence are likely to exercise an unfavourable psychological effect on future investors by reducing their willingness to expose their investable funds to the danger of rapid devaluation. But after having balanced this possible check on future investments against the probable psychological effect of any holding-up measures, Professor Pigou yet in the end rejects any policy of restriction. Such a policy, he fears, would discourage not only the adoption of improvements that have been invented, but also the invention of new ones.

As a matter of fact, the relative strength of these opposing psychological forces is difficult to assess. On the one hand, unrestricted competitive application of new methods has certainly stimulated technological progress during the last century. On the other hand, every cyclical depression shows that the investors respond to suddenly growing risks with a kind of "general strike" which disturbs the working of the market system so thoroughly that it calls forth the most extreme form of intervention : public investment. Raising a problem of economic sociology rather than of economic theory, this line of speculation may assume increasing importance with the growth of specialisation, of immobility and, above all, of the general scale of investment.

[1] Professor Pigou's reasoning expresses what may be regarded as the prevailing view amongst modern theorists. For recent statements of the same point of view cf. Professor Robbins' "Essay on the Nature and Significance of Economic Science," 1932, p. 50, and two papers of Professor Hayek's : "The Trend of Economic Thinking," Economica 1933, pp. 121-137, and „Technischer Fortschritt und Ueberkapazitaet," Oesterreichische Zeitschrift fuer Bankwesen, 1936, Heft 1/2 pp. 9-23.

[2] loc. cit. p. 189.

(2) Of a more theoretical character is a short term dynamic argument. It points to possible losses arising during the period of adjustment which follows the introduction of new technical methods.[1] In most cases a change in the industrial technique of production is accompanied by some displacement of prime factors, first of all, of labour. Under modern conditions these factors will find re-employment only after the lapse of a shorter or longer period of transition. During this period they are not only prevented from adding to the national income[2] but must themselves be maintained out of the income or capital of the community. This is obviously a social liability which stands out against the additional assets of the beneficiaries of the improvement.

This reasoning, it is true, demonstrates that technical progress produces its full social net *gain* only after, and in proportion to, the re-employment of the displaced factors. But it is more difficult to prove that, during the transitional stage, the technical change brings about an actual social *loss*. This would be the case only if, while the displaced prime factors are unemployed, the social net product were necessarily smaller than in the original state of affairs. But whether this is so, depends on the size of the output which the improved plant produces after the introduction of the new technique. When this output is equal to or even larger than the product of the old capital equipment the national income will certainly not fall during the transitional period so that, from the point of view of social accounting, there does not arise any deficit. Only if the output of the improved plant falls below the original level,[3] does an actual social loss ensue until a proportional part of the displaced factors has been re-employed.

[1] Cf. M. A. Copeland's "Communities of Economic Interest and the Price System" in "The Trend of Economics" ed. by R. G. Tugwell, 1924, p. 142 and A. G. B. Fisher, "The Clash of Progress and Security," 1935, p. 106.

[2] Professor Pigou's distinction between "national income" and "national dividend" (loc. cit. Part I Chapt. III) is of no importance for these and the following considerations.

[3] Ricardo wrongly regarded this case, the diminution of the "gross produce," as the normal case, cf. Principles of Political Economy and Taxation, 3rd ed. Chapt. XXXI.

One might try to build up a more general argument for the social disadvantages of the transitional period by pointing to possible secondary consequences of the displacement of labour. If such displacement is widely spread and long lasting, the demand for consumers' goods will be markedly reduced. The resulting fall of prices in this sphere of production may evoke a general process of deflation so that in the end the technical progress may turn into a general depression. This reasoning contains important elements of a trade cycle theory. But the connection deduced between technical dynamics and depression implies the working of additional monetary and psychological factors, and therefore should not be used as a final argument in our partial equilibrium analysis.[1]

Thus we have to acknowledge that the various dynamic objections referred to can hardly be regarded as a definitive refutation of Professor Pigou's conclusion, and this all the less so as his result does not relate to any transitional stages but to the final equilibrium position. It is against this optimistic result in terms of comparative statics, or rather against the unqualified generalization in which orthodox theory advances this result, that the following remarks are directed. They try to elicit the very special premises under which a technical reorganisation of production yielding an additional marginal return to the individual promoter, adds an equal amount to the value of the marginal social net product. Expressing the same problem in more concrete terms, we ask under which conditions technical improvements in fact make an equal contribution to the earnings of the promoter (or the real income of his customers) and to the national income, thus necessarily securing the optimum distribution of resources.[2] At the same time we want to demonstrate that, under the modern industrial system,

[1] For the same reason, we shall, for the whole of our positive argument, disregard, as Professor Pigou does, the additional complications arising from the fact that, in the industrial market, every sectional process is subjected to, and transformed by, the general cyclical fluctuations. To apply the formal result of such an isolating argument to the special conditions of industrial dynamics is an additional task which can be solved only in connection with a general theory of the trade cycle.

[2] Cf. Pigou, loc. cit. Part II, Chapts. II, III, IX.

these premises constitute the exception, and that the normal conditions under which technical changes take place there suggest a less favourable conclusion.

II

The calculation on the basis of which the individual entrepreneur decides whether technical improvements are profitable to him are, in principle, very simple. As Professor Hayek puts it, under the conditions of a competitive system "the new invention will be introduced in *all* cases where it reduces current costs of production ; *i.e.*, where the cost of the capital required for the new invention is smaller than the saving on other costs made possible by the new machinery . . . ."[1]

Have we a similar method at hand for calculating the social advantages of the technical change? Professor Hayek has suggested that the comparison of the respective cost items implicitly also answers this question. ". . . . . the cost of capital, as well as other costs (such as the wages of labour) which are saved, is evidently determined by the competing demand of other industries."[2] If, per unit of output, the cost sum of the new capital required is smaller than the cost sum of the factors displaced, the latter "will produce elsewhere more than the new capital could have done." Or, as he has formulated the same idea on another occasion : by choosing the cheaper method of production, the entrepreneur does what every wise planner should do, namely produce a given output with the minimum expenditure of resources, thus leaving over as much as possible for other ends.[3]

Again the question arises whether accepting the optimum distribution of resources as a yardstick for social gains and losses implies the admission that the maximisation of private profit always leads to such an optimum distribution. Professor Hayek himself would probably agree that his conclusion is based on, and restricted to, a ceteris paribus reasoning which treats the

[1] Economica, loc. cit. p. 132.

[2] ibid. p. 133.

[3] Translated from the German version in "Technischer Fortschritt und Ueberkapazitaet," loc. cit. pp. 15-16.

underlying cost items, the prices of labour and capital, as independent but fixed data. Only so long as wages and interests maintain the relation on which the original calculation was based, do both private and social accounting justify any investment based on this calculation. This is a simple statement, and is certainly in itself no argument against the orthodox method of reasoning. In a dynamic system, any theoretical deduction and, which is even more important, any practical transaction is always at the mercy of unforeseen changes in the data which may frustrate the anticipated result. The position is, however, entirely different if the distorting changes in the data do not occur *independently* of the economic process under consideration but are themselves evoked by this process. In such cases the secondary consequences of the original transaction must be included in the final profit and loss account. Precisely this is the normal situation which arises from changes in the modern technique of production.

In order to substantiate this point we have to revert to the transitional period during which the displaced factors of production have not yet found re-employment. But this time we are not interested in how their idleness affects the size of the real income of the system, but in the influence which a change in the supply conditions of prime factors exercises on their relative prices. To simplify our analysis we shall select the most elementary case of only two productive factors existing, assuming that the technical improvement has substituted capital for part of the labour force originally employed. We exclude any monopolistic manipulations in the factor markets.

(1) Turning first to the labour market, we have to expect a certain fall of the money wage level in the industry concerned during the period of unemployment.[1] The amount by which money wages will be permanently reduced there even after the reabsorption of the displaced workers, mainly depends on (a) the size of the displacement and the proportion of the displaced in the total number of workers of equal qualification, (b) the slope

[1] In order not to complicate our exposition, we keep here to what Mr. Keynes calls the "classical" line of argument, expecting a fall of real wages from a fall of the nominal wages which occurs in what represents only a small part of the system.

of the marginal productivity curve of labour both in the industry concerned and in industries generally, the latter expressing the degree of mobility of labour which permits transference of the unemployed to other industries. We may conclude that the original relation between wages and interest will be maintained only if the size and the proportion of displacement are very small, or the productivity curve of labour is very flat.

Now any considerable change in the relation between wages and interest may strongly affect the profitability of the new machinery. Though, of course, the fall in wages will reduce prime costs also under the conditions of the new technique, here, owing to the smaller proportion of wages in total costs, the relative reduction will be smaller than it would have been under the original technique. The larger the fall of wages the greater is the chance of the old machinery to make the new "obsolete" in its turn. Not only will the profit expectations of the technical promoter be disappointed in this case, but the capital newly invested will not even earn normal interest. Though it was induced by rational considerations of private net gain, the technical improvement turns out as a wasteful investment.

Not every kind of technical improvement is exposed to the danger of being disproved by later wage reductions. The higher the productivity of the new technique the greater must the reduction of wages be to make the old technique profitable again.[1] But technical improvements of a minor degree of productivity are indeed threatened by subsequent frustration which may arise from a dependent variation of the very data that have led to their introduction.[2]

(2) Of much greater importance, however, are the consequences of the technical change for the rate of interest. In discussing the effect on the wage level, we have silently assumed that wage reductions are by themselves a sufficient means for

[1] Cf. for further details A. Kaehler, Die Theorie der Arbeiterfreisetzung durch die Maschine, Leipzig, 1933, pp. 75-80, 125-131. Kaehler's book must be regarded as the most advanced analysis of the theory of technological unemployment so far existing in modern literature.

[2] This is a case in which rigidity of the wage level protects rather than endangers the profitability of the capital equipment in operation.

promoting the final re-employment of the displaced workers. This hypothesis, a dynamic variant of the general theory of marginal productivity, enjoys a wide reputation as the final solution of the problem of how to compensate displacement of labour caused by the introduction of new machinery. But we cannot overlook the fact that the validity of this theory is itself based on very special and rather exceptional assumptions.

Both its adherents and its opponents agree on one cardinal point, namely, that under modern technical conditions, productive factors are complementary and hardly ever operate in isolation. This means that in the case under consideration, compensation can be brought about only by combining the displaced workers with some form of real capital, as a rule, with fixed capital.

The prevailing theory now contends that the *existing* capital stock is able to fulfil this function if only the wage rates are flexible enough to adjust themselves to the corresponding decline in marginal productivity. Closer examination, however, shows that a large displacement cannot be compensated in this way unless not only are wages flexible, but also the capital equipment is highly "plastic". It may be true that capital and labour can be combined in almost any quantitative proportion so long as capital exists in *money* form. This is only a different formulation of the fact that for every process of production there exists in any moment a series of possible combinations of the factors. Out of these, the entrepreneur *who starts on investment* can choose the combination which is most profitable under the ruling prices of capital and labour. But once having made his choice, and having transformed his money capital into real capital of a definite technical shape, he is no longer capable of liquidating the crystalized form of his capital equipment in the short run. Only a long term process of amortisation does gradually restore the original plasticity of the money form. In the meantime, as a rule, none but minor reorganisations can be made to alter the employment capacity of the existing equipment.

This conception of the technical structure of real capital is formally in full harmony with the marginal productivity

theorem. It only suggests that under modern technical conditions the marginal productivity of additional labour combined with a given stock of real capital is very low, if not zero. If we disregard the possibility discussed under (1), namely the re-opening of abandoned capital equipment, the displaced workers cannot be re-employed at all under such conditions, not even at zero wages, before a new capital stock has been provided for, either out of the gradually accruing depreciation fund or out of new savings.

To refute the necessity for such additional capital accumulation, the adherents of short run compensation have advanced yet another hypothesis. If the existing capital equipment is not plastic enough to provide for additional working places, an appropriate use of the *normal* saving rate might do this service. The fall of wages will generally foster the industries employing a relatively high proportion of labour, and thus will direct the new savings into such channels as are most favourable for compensation. But even this argument does not stand realistic examination. It rests on two assumptions both of which are difficult to verify. On the one hand, it supposes a degree of mobility of labour which is hardly compatible with modern forms of occupational and local specialisation. On the other hand, this proposition treats consumers' demand as if it were a variable which depended exclusively on the supply price of commodities, and therefore automatically adjusted itself to any technical requirements of employment.

Thus we come to the conclusion that the modern conditions of production, such as technical rigidity of the capital equipment and specialisation of labour, make it very improbable that any large scale displacement of labour can be compensated in the short run and with the help of the given capital resources.[1] As a rule, a process of additional saving and investment will have to start which gradually builds up new working places for the unemployed. We are not interested here in the various

[1] For a more detailed discussion of the various problems implied cp. Kaehler, op. cit., and H. Neisser's paper "Lohnhoehe und Beschaeftigungsgrad im Marktgleichgewicht," Weltwirtschaftliches Archiv, 1932, Vol. 36, pp. 415-455.

stages of this dynamic process. We direct our attention to the special problem of how the rate of interest will be influenced by this secondary process of investment which is itself evoked by the primary technical improvement.

No doubt, the rising demand for savings will push the rate of interest above the level in view of which the technical improvement was calculated. At first sight, one might object that not only the demand but also the supply of savings has automatically increased. The additional profits of the technical promoter, or the rising real incomes of the consumers, do indeed offer a new source of capital supply. But whether this source actually starts to flow depends on the propensity to consume of both promoters and consumers, which is determined by independent sociological and psychological influences. Moreover, even if these sums were to be entirely devoted to capital accumulation they could only satisfy part of the additional demand. These sums represent *flows* of income even the annual amount of which is usually not large enough immediately to provide for the full establishment of the new *stock* of real capital required. Therefore they cannot, as a rule, check the forces which push up the rate of interest.

The ensuing rise of the rate of interest will combine with the fall of wages discussed above in further reducing the profitability of the new machinery. But even if the original profit expectations of the technical promoter are not fully annulled by this change, how have we to assess the effect of a rising rate of interest on the balance of the social net product ?

No rational objection can be raised against the original decision of the private entrepreneur. He can hardly foresee the secondary influences his investment exercises on the prices of the factors of production, even if these influences ultimately frustrate his investment. It is, however, different with the social accounting of technical improvements. Here we must not break up the reckoning into two independent phases, but we have to regard the dynamic process as a unity, and to set off against one another all the various assets and liabilities which

arise during the various stages of adjustment up to the new state of equilibrium when the whole labour force is re-employed.

From this point of view, the distribution of resources as initiated by the original profit expectations cannot be accepted as a social optimum. The disregard to the secondary process of capital accumulation keeps the rate of interest during the first stage on a level which is too low in view of the imminent claims on the saving resources. This original underestimation of the future demand subsequently causes a rise of the rate of interest above what we define as the "virtual" level, which would have been ruling if the total demand could have been foreseen from the outset. Instead of one single level corresponding to the supply and demand conditions of the dynamic process in its entirety, and thus measuring the social net product of the marginal unit of saving under these conditions, we find two different levels in succession. The former rate produces the appearance of a relative plenty in the capital market, and thus evokes forces leading to a relative deficiency which the latter rate has to balance.

Only those new investments which earn at least the "virtual" rate of interest as defined above, fulfil the criterion of an optimum distribution of resources. The returns of all innovations which earn less fall short of the new equilibrium level of the marginal social net product even if, under the actual rate of interest at the time of investment, they yield an additional marginal private net product. This is, however, not all. Quite independent of the technical improvement, the actual rate of interest, unduly low from the social point of view, stimulates other investments throughout the system which will no longer prove profitable as soon as the secondary effects of the technical change push up the rate of interest. It is mainly these investments which are responsible for the relative deficiency in the capital market when the process of compensation is to start. By diverting productive resources from the point of utilisation which under the conditions of the final equilibrium appears as the optimum point, all these investments prejudice the social net product.

III

We are able now to formulate the special assumptions underlying the orthodox conception that all technical improvements which earn an additional marginal private net product equally add to the marginal social net product. This is true if the dynamic process set in motion by the introduction of the new technique does not alter the relation of the prices of the productive factors. This general condition, in its turn, implies that the elasticity of demand for labour is very high, both in the industry in which the technical change occurs, and in industries generally. Formulated in concrete terms of the technique of production, orthodox theory presupposes a high plasticity of the real capital in operation and a low degree of specialisation of labour.

These assumptions must be regarded as very unrealistic under the modern organisation of capital equipment and labour. They may hold true for relatively small technical changes which involve only minor displacements. But they cannot be accepted for any large scale displacement the compensation of which requires the building up of a new capital equipment. This makes the adjustment towards a new equilibrium a long term process during which, as a rule, both wages and interest rates undergo considerable changes. These changes express, and respond to, subsequent alterations in the relative scarcity of the prime factors, alterations which themselves have been evoked by the original technical reorganisation. The initial relation between the prices of the prime factors with regard to which all investments are being undertaken at that time, clashes with the final relation which alone can restore the equilibrium of full employment. Thus the initial relation induces a series of investments which cannot be profitably maintained, and very often not even technically completed, while other investments, necessary for the restoration of equilibrium, are delayed and, under the pressure of the "excessive" rate of interest during the later stages, even definitely prevented.

Nevertheless we must not overlook the fact that our result contrasts with the conclusion rather than with most of the

reasoning of Professor Pigou. This is, above all, true of two arguments which he has directed against former criticisms of the orthodox standpoint.

(a) As he rightly says, no clash can arise between marginal private and marginal social net product so long as no displacement of prime factors takes place. Therefore we have to regard as legitimate from both points of view all those technical improvements which do not alter the employment capacity of the equipment in operation.

Closer examination, however, shows that there do not exist many instances of such a type of improvements. At first sight, one is tempted to include among them all those cases in which the new machinery set up does not prevent the old from continuing to produce the former output though at reduced prices. But this notion would be fallacious. Very often the additional output of the new machinery increases the total output to such an extent that it can be disposed of, at a price profitable to the new machinery, only if the elasticity of demand for the product in question is greater than unity. This, however, means that demand has to be withdrawn from other commodities, in this way displacing prime factors at some other point of the system.

And even some of the few instances remaining of non-displacing technical changes might yet fall under our critical verdict. If, under the ruling of the "virtual" equilibrium rate of interest, the new machinery were not profitable, one could regard the ultimate supersession of the old machines as a social loss even when it occurs only subsequently after their physical depreciation. Moreover, we have to add to the displacing types of technical improvements all those in which a firm, by substituting real capital for prime factors, reorganises its own existing machinery even without eliminating any other firm. Thus, in the end, the formal exclusion of all non-displacing cases does not much restrict the practical bearing of our analysis.

(b) Another point in Professor Pigou's exposition has still greater significance. He is right in rejecting the idea that it is the premature depreciation of the capital invested in the

old machinery which effects a social loss. Provided that investment in the old machinery was justified by the "virtual" rate of interest of that time, no *independent* changes in the data, and therefore no technical alteration, can subsequently disprove the social value of past investment. This all the less so as indeed, as Professor Pigou points out, all private losses of the old producers are balanced by corresponding gains of the new producers or the consumers. The dilemma we are discussing does not arise from the premature obsolescence of existing capital but from the necessity to build up new capital. This is also the reason why this dilemma cannot be prevented or overcome by any measures which simply try to protect existing capital equipment in the interest of the savings formerly invested there, but only by such distribution of the disposable savings as will produce throughout the system a marginal return equal to the "virtual" equilibrium rate of interest. As the free play of individual profit calculations fails to bring about such a distribution from the outset, a secondary process of adjustment is set in motion which reveals and, to some extent, recovers the social losses produced by these private calculations. That he entirely disregarded this secondary process prevented Professor Pigou from spotting the actual danger point at which a discrepancy between social and private gains may, and under the technical conditions of the industrial system, does arise.

IV

In conclusion, the fact should once more be emphasized that the dilemma described does not result from any irrational behaviour of individual entrepreneurs, least of all of the technical promoter. For his transactions he has no criterion at his disposal other than calculations of costs and profit at the prices ruling. If, by following this guide, he diverts resources from the optimum point he makes manifest a fundamental weakness of the system of free enterprise operating under modern industrial conditions. This weakness is due to the fact that even in the complete absence of monopolies, the technical rigidities referred to make competition imperfect in the true sense. For every partner in the exchange process is confronted

with modifications of the ruling factor prices on account of his own transactions. If these transactions create a competitive advantage for him as is the case with technical improvements of a high productivity, he himself need not be concerned about the secondary consequences of his investment. As a rule, it is not on him that the additional burden falls when the investment turns out as a malinvestment from the social point of view. It ultimately falls on the consumers who have to content themselves with a total output different, both in quantity and quality, from the optimum that could have been produced with the disposable resources. That such a divergence can result from the continuous dynamic process of the industrial system must be attributed to an inherent imperfection of competition which makes the order of prices and quantities as a whole unstable at any given moment. By arranging our long term distribution of resources according to the individual profit calculations of the moment—the only way open in a system of free enterprise—we can never be sure that we chance upon that distribution which corresponds to the long term order of prices and quantities.

Therefore Professor Hayek is hardly right in expecting a wise planner to act on the same basis of calculation as the technical promoter does. Obviously such a planner would not only foresee but also bring to account the secondary consequences of a displacing technical improvement. By balancing the advantages which the technical change grants to the consumers, against the disadvantages which a subsequent deficiency of capital inflicts on them, he would and, which is even more important for our systematic considerations, he actually could adjust his calculation to the long term tendencies of the system. This means that he would have to base his investment decision on what we called the "virtual" rate of interest, in this way securing the constant equality between marginal private and marginal social net product. One may perhaps doubt whether the institutional guarantee for such an equality which a planned economy offers, is worth the sacrifice of such social advantages as a free market exhibits. But even if one gives these advantages priority in the final estimate of social efficiency one should

at least admit that, under industrial conditions, the free market is constantly liable to a deficit in the balance of the social net product.[1]

A. Löwe

[1] In passing it may be noted that the validity of our argument is by no means restricted to the case of technical improvements. It relates to every kind of dynamic change which displaces large amounts of prime factors without automatically providing for their short run re-employment. From this point of view, both the establishment and the breaking up of monopolies, the introduction and also the abolition of tariffs, and even large changes in demand involve secondary social costs in addition to those which appear in the primary reckoning of private gains and losses.

The Future of the Rate of Interest

I

1. The future of the long term rate of interest presents a problem not only to the individual investor but also to society and to the statesman. The importance of the problem is obvious enough to the individual, for the rate of interest plays a significant part in the valuation of securities, and the course of the rate of interest must therefore play a dominant part in the determination of the course of security prices. This is the problem of how the rate will behave.

There is a different problem presented to those inspired by the public interest, by virtue of the fact that the course of the rate of interest is largely undetermined. To a degree still debated, the rate of interest stands in a market economy in the position of a controlling factor, controllable by authoritarian action. Thus, the future of the rate of interest poses the question of the course it ought to follow in order that ends may be attained which are considered conformable with the public interest.

Finally, all this implies the problem inherent in action—the particular application of general ideals and principles. It may be said that for the economy to work "well" or "at its best" the rate of interest should behave in such a way as to promote certain lines of policy ; there remains then the interpretation of that advice into actual rates of interest, times at which changes should be inaugurated and the discovery of a technique to attain the immediate purposes that has been identified.

This paper is concerned almost entirely with the first problem; what is said *à propos* the others are mainly incidental. This is not because the first problem is considered to be the most important, but because the question of the repercussions of authoritarian action upon the actions and problems of individuals has not been much discussed. And these repercussions are of undoubted importance to the individual.

2. There are thus two quite distinct *genre* of problems presented by the course of the rate of interest. First, there is the problem presented to the individual of how the rate of interest

will in fact behave in the future. Secondly, there is the not unrelated problem of how it is likely to behave in relation to how it ought to behave, with the secondary problem hovering in the background of how the actual and the ideal may be made to coincide. It will be observed how, potentially at any rate, these different matters are interrelated. The individual's estimate of how the rate will behave must take account of how it is likely to behave, how we think it ought to behave and how capable we are of so making it behave. And, on the other side of the picture, it cannot be forgotten that it is individual opinions which sway the market. How the rate is likely to behave is not unrelated to how it is expected to behave.

3. Alterations in the rate of interest are of more importance to the active investor than is the level of the rate. One can make a rough division of investors between those who are interested primarily in maintaining stability in their incomes and, as a result of fresh savings, augmenting them, and, on the other hand, those to whom the maintenance or augmentation of capital values is of primary interest. In the first category we should place those who choose the securities contained in their portfolios on account of their expected steady income-yielding properties or on account of their long term potentialities. These people are virtually uninterested in the day to day capital value of their holdings, and certainly they will be unconcerned at alterations in capital value that are the consequence of alterations in the rate of interest. Depreciation in capital values that occur as a result of an actual or prospective failure to yield the previous income will indeed have an interest for them, and on this account most portfolios will be subject to periodic review to inquire to what extent the qualities for which the securities were chosen are still present. So long, however, as income is safe, the rate at which the income is capitalised is a very secondary concern. Securities which have not belied or which do not appear likely to belie the reputation for which they were purchased will be firmly held and kept off the market. Clearly if one buys a security to hold and not to sell, the income it yields and not the price it will fetch is the matter which is important.

Some institutional investors take up a somewhat similar attitude towards their portfolios. For example, investment trusts proper change their holdings slowly, though no doubt they are quicker than the private investor of the type mentioned to sell securities which appear over-valued. In general, however, it is long term factors, as in the case of the private investor which determine their investment policies.

In quite a different category stand two other dissimilar types of investors. First, the private investor, who places conservation of capital before stability of income, has his investment policy influenced by actual or potential alterations in market values. This being so, and because capital values are more susceptible to change than is income distributed, his portfolio is, of necessity, composed of less permanent elements. A threat of alteration in values is likely to bring about an alteration of holdings. Ultimately, it must be supposed that the aim of this type of investor is the same as that of others. The difference between the aims is in the way which the different kinds of investors adopt to attain their end, some being direct and others indirect.

It is a rather different motive which influences the second class of investors in this category. The position of an investment trust confronted with a depreciation in the capital value of its securities is not intimidating because the liability they cover is to proprietors, and it is a liability which is unlikely to be faced. Depreciation may at the most demand a conservative policy of distribution, and may be met by carrying it, explicitly or implicitly, to a suspense account. The problem created is entirely an accounting one. Moreover, because the value of securities held is roughly equal to capital plus undivided profits, there is in most well-managed trusts a very reasonable chance that depreciation can be met from reserves, which can be replenished in future years from appreciation. So easy a solution may not always be found where equity holdings are in question, but where the change is in interest rates (and not in earnings as a consequence of depression) no great difficulty need be envisaged. The position of businesses which deal in monetary obligations extending over periods of time is, however, quite different.

The essence of banking and insurance is the acceptance of liabilities not to proprietors but to clients in return for money payments. Hence assets are held against liabilities more or less immediate, but in all cases against liabilities which prudence demands shall be kept fully covered. Moreover, the financial structure of banking and insurance houses is very different from that of investment trusts. Instead of using proprietors' money for investment in securities, they use it to create an organisation to deal in debts and credits. The consequence is that a depreciation in security holdings is doubly a more serious matter ; first, because it is not simply an accounting problem but also an actual one, and secondly, because the size of the security holding in relation to capital makes it much less easy to provide for depreciation out of undistributed earnings.

4. The different policies which different classes of investors adopt in search of their own interest hold out the promise of dissimilar behaviour during market movements. What constraint will private ambitions put upon the behaviour of the rate of interest, limiting the movements which from one point of view or another may be deemed desirable, and which the monetary authorities may strive to achieve ?

As regards raising the rate of interest, the matter in question is not the ability of individuals to obstruct a trend desired by the authority, it is rather the likelihood of individuals accelerating a trend, and by forecasting its ultimate outcome, causing a more precipitate decline than may be desired. If holders of stock could be sure the trend of security prices were downward, the most profitable course apparently open to them would be the sale of their stock with a view to its re-purchase at a lower level, and, in the case of those with funds to invest, to defer their purchases. The speculative investor may indeed behave or attempt to behave in this way, and will do so the more confidently he can predict the future. Yet judging his actions in isolation the premature decline he is likely to cause is less than might be expected ; for first, recognition of a trend is easier after than before or during the event, and secondly, even if he withdraws from the gilt-edge market he is likely to give interest rates support by attempting to use his money profitably elsewhere.

The speculative investor is not likely to bring about a weakening of the market simply because there exists in his mind the premonition that it will eventually fall, for he is not so much concerned with how the market ought logically to move as with how it may be expected to move. What is more likely is some acceleration of a weakening trend when it makes an appearance, yet held back by doubt and indirect support. Moreover, the authority is not without means of offsetting tentative realisation.

Other classes of investors are less likely to create difficulties. Realisation of stocks held for income is much less likely to occur. Many firm holders are unaware of and indifferent to the prices that their investments will realise, and many that are aware will think, perhaps reasonably, that the trouble, anxiety and dangers of following relatively short run movements are not worth while if the stocks held are, in twenty or so years, as likely to show appreciation as depreciation. And for institutional investors the danger of bringing about depreciation on all their holdings by selling a part is likely to be an effective deterrent.

A strongly held view of a declining trend is more likely to cause immediate weakness through the deferment of purchases. But again there are reasons for supposing this effect to be less potent than might be thought.

The individual investor is likely to be reluctant to leave his money idle for a number of years on the expectation of a favourable buying opportunity of whose occurrence there must be some doubt. Immediate income which is certain is likely to pull heavily against a greater future income which is uncertain. The more likely course is for him to make his purchases at favourable moments during the decline. It is not to be expected that the investor will count his gains before they are made and spend out of his capital while it remains unproductive. Hence on this account the market is likely to descend in a series of minor movements.

Acting upon expected market movements is speculation, and speculation which turns out to be unsuccessful has more serious consequences for the institutional than for the private

investor. It is not, therefore, to be expected that the institutional investor will be much attracted by speculative postponements of purchases—rather will it incline to a policy of safeguarding the income upon the expectation of which liabilities are accepted, while at the same time limiting so far as possible the capital depreciation which it may suffer. On the other hand, it is to be expected that the institutional investor will make as full a use as possible of minor movements to buy favourably.

What one would expect, therefore, during a period of rising interest rates would be relatively sharp depreciations followed by support—a decline supported by the parachute of investment rather than precipitated by speculative anticipation. Moreover, during a period of rising rates, support will be more freely given to the market by reason of the fact that investors trying to safeguard their capital and their income will purchase relatively short dated stocks, and during a period, declining yields on short dated stocks, relatively to undated stocks, will be an indication of the apprehension of a rise in interest rates.

5. In connection with what is written above the following tables are of interest. They show that during a period of rising interest rates, and during a period of increasing economic activity and rising prices, in which, to say the least, market opinion was not surprised by the trend displayed, security prices did not fall disastrously to some foreshadowed level, or even fall without respite. On the contrary, except for two periods of market weakness, they held themselves in suspense, and it is noteworthy that the periods of weakness were the immediate results of factors which give what was considered an obvious lead, namely rearmament plans which crystallised fears, and the "Gold Scare" which caused "technical" weakness. Again, the minor fluctuations around the trend, indicated by the range of movement of Consols during the years in question, indicates the way in which buying movements are influenced by very short term considerations, even during a major movement.

The relative movements of dated and virtually undated securities are also of interest. It will be observed that as the prices of gilt edge securities were mounting up to their peak, at

which Local Loans were in sight of conversion, the comparative yield on dated securities declined. This suggests, though not conclusively, that the fear existed that the movement was impermanent and that those with funds to protect found a refuge at a sacrifice of income in dated stocks. At the same time, the belief that an effort might well be made on the part of the authority further to reduce the rate of interest to bring about a conversion of Local Loans would explain why the market continued upward. For if everyone believed it would continue upward (even though subsequently it might fall) everyone would act upon that view.

It is interesting to observe how in recent months the rise in the rate of interest has proceeded in hand with a rise in the comparative yield of dated stocks. This is an indication (though again not a conclusive one) that the expected rise in interest rates is running (or has run) its course. Perhaps, then, at the present time, the market is virtually abstaining from taking a view on the future course of interest rates, seeing no reason to expect them to change. In the light of recent experience, there appears to be no reason to doubt that there would be a response to some sign that would give an indication of likely happenings in the immediate future. Thus, for example, an intensification of the armament programme or the inauguration of an extensive road building programme might well bring further weakness, or conversely, a slackening of recovery and sales of gold to the Bank of England might cause interest rates once more to fall. Because Consols have fallen 10 points this year on one view of the situation and apparently attained quasi-equilibrium should not lead us to suppose that they may not fall or rise considerably in the near future on another view of the situation. The limitations to movement are the limitations which prevent underlying conditions from changing rapidly.

The figures relating to the changes in the comparative yields of different stocks are made difficult to interpret on account of the changes in credit conditions during the period. Whether or not the joint stock banks expect a rise in interest rates they will prefer to carry dated securities. Some part of the relative rise in the prices of these stocks must therefore be

put to the account of monetary policy. Increasing by £M283 after 1930, the major expansion in the banks' investments was effected by 1933, so that unless subsequent to that date there arose a deficiency in the floating supply of dated stocks, one would not expect the relatively minor movements in banks' investments after that date to explain the movement of comparative yields. And subsequently to 1933 the supply of dated stocks has been augmented. Again, quite recently, there has been some selling by banks of securities and this may help to explain the more recent movement.

TABLE I

	1927 Av'ge High and Low	1931 Low	1933 Low	1935 High	1937 Sept. 8th	Capital Appreciation	
	Prices and Yields					1933–35	1935–1937
Local Loan 3% (at Government option)	63¾ 4.72	57 5.26	82⅛ 3.68	98¼ 3.07	84½ 3.57	+19.8	—14.1
Metropolitan Consols 2½% (20–49)	69½ 4.15	66 4.59	90 3.16	101¾ 2.46*	94¼‡ 2.95	+13.1	—6.9
Conversion Loan 2½% (44–49)	—	—	92 1/16 3.04	103⅝ 2.13	94¾ 2.97	+12.6	—8.6
Conversion Loan 5% (44–64)	101½† 4.67	93† 5.47	114⅝ 3.49	124½ 2.12	113⅛ 2.95	+8.7	—9.2
Yield on Metro. Consol 2½% as % of yield on Local Loan	87.9	87.3	85.9	80.1*	83.2		
Yield on Conversion 2½% as % of Yield on Local Loan	—	—	82.6	69.4	83.2		
Yield on Conversion 5% as % of Yield on Local Loan	98.9†	104.0†	94.8	69.1	82.6		

* Flat Yield only calculated ; other Yields calculated to redemption.
† War Loan 5% (1929-42) used.
‡ Quotation for Sept. 15th.

TABLE II

		1935 High	1937 Jan.-Aug. High	1937 Sept. 17th
Consols 2½%	Price	94⅜	84⅞	73¼
	Yield	2.66	2.95	3.40
Conversion 5% 44-64	Price	124½	117½	113½
	Yield	2.12	2.38	2.90
Conversion 2½% 44-49	Price	103⅝	101 5/16	94 11/16
	Yield	2.13	2.39	2.98
Yield on Conversion 5% as % of Yield on Consols		79.7	80.7	85.3
Yield on Conversion 2½% as % of Yield on Consols		80.1	81.0	87.6

TABLE III

Year	Rate of Interest Index of Yield*
1934	
1st Qtr.	76.6
2nd ,,	76.9
3rd ,,	75.5
4th ,,	72.6
1935	
1st Qtr.	73.5
2nd ,,	73.8
3rd ,,	75.0
4th ,,	73.5
1936	
1st Qtr.	73.6
2nd ,,	73.8
3rd ,,	73.1
4th ,,	74.0
1937	
1st Qtr.	79.2

* London and Cambridge Economic Service. Base Year, 1924.

6. We turn now to the consideration of the behaviour of the different classes of investors during a period of falling rates under the apprehension of a subsequent rise. Here the question is whether the rates can be lowered to a level desired by the authority. The force of what is written below depends upon the length of time envisaged for a movement, for what is true for one extending over four years is not necessarily true of one lasting only six months.

An element of doubt introduced into a given situation is sufficient to make investors behave in a way which subsequently looks irrational. If investors knew that a market movement would be reversed they might not follow it upward, but an ability to read the future with certainty would not only constrain movements but would also, no doubt, necessitate the revision of starting points. Given that an element of doubt enters into the situation, what is rational no longer need coincide with what is probable.

When security prices tend upward the speculative element will lend support to that tendency, for it is in a favourable milieu of short run conditions that profitable operation is most possible. There is little reason to doubt that, whether or not they are successful, professional or speculative operators and the authority will attempt to lead the market, and to a certain extent a rise is "rational," for if, say, after 6 years, securities fall back to their original price, it will pay during the first year or two of the movement to buy at a price substantially above that eventually ruling rather than let money lie idle. Ultimately, however, the extent to which the rate can fall will depend upon the behaviour of more substantial interests. The individual investor will find it difficult to refrain from buying on a rising market, in the hope that in a number of years time the trend will be reversed. A short run profit that from visible market tendencies seems assured is likely to outweigh a hypothetical loss at some distant date. A rising tendency in the market suggests the view that the market is expected to rise, so that even those who have qualms about the movement may follow it in the expectation, perhaps vain, that they can sell at

an opportune time. In more speculative markets, the knowledge that previous bull movements have been reversed does not deter investors from purchasing on a rising market.

What was written in section 5 above is relevant here to the policy of the institutional investor. It is unlikely to refrain from buying and it can safeguard its position to an appreciable extent, without failing to support the market, by buying dated stocks.

The relative security for capital provided by dated stocks arises from the market practice, under normal conditions, of equalising the yields to redemption on dated stocks with the flat yields on undated or virtually undated. Thus a fall in the price of a dated stock increases its flat yield and also increases what may be termed its redemption yield. The nearer is the date of redemption the more then does a given fall in price increases the yield.

Over a number of years, the fact that a stock is dated may or may not make it a safer refuge for capital than an undated stock, for that will depend upon how the rate of interest stands at the end of a period comparatively with the beginning of it. For those who wish to conserve their capital (or to augment it conformably with safety and without anxiety) over a relatively long period of years a dated security should perhaps provide little attraction. For unless the rate of interest at the time of investment is exceptionally low, there exists a very reasonable prospect that over a long period of years it will at one time or another stand lower. If realisation is then effected the dated stock will have proved the less attractive. Unless therefore a particular date is chosen as the time of likely realisation—instead of a range of time—undated stocks would seem to be as attractive as dated.

Thus for the private investor who is unconcerned with the short run alterations in the value of his capital and who is not tied to particular dates for the realisation of his securities, undated may often serve as well as dated stocks. The protection afforded by dated stocks, even of medium term, is not so much against eventual depreciation as against immediate depreciation. While the institutional investor is of course interested in

preserving its capital over a term of years, it is also interested in saving itself from year to year financial embarrassment by limiting the depreciation which may be suffered at any date. This dated stocks will serve to do. Thus, to some extent, the attractions of dated stocks are conventional, but they may also be real in the case of an institution whose liabilities mature over a period of years and which may therefore have to realise its investment at specified dates.

As was mentioned above, short run protection from capital depreciation derives from the practice of including in the yields of dated stocks profit or loss to redemption. In a sense this is formally logical. Considering a redemption date of 1960 it is clear that so little is known of the rate of interest likely to rule then, that the chances of it being above or below that ruling at present are equal. Hence it is reasonable to work on the assumption that it will be unchanged. It is reasonable therefore to price a dated stock standing below its par of redemption at above the value of an undated stock, carrying a similar nominal rate. But clearly this convention would be threatened if the market became less concerned with yields and more with short term fluctuations in capital values. Dated stocks would, however, continue to give real protection against loss on maturing liabilities and additional safeguard would be obtained if much shorter dated securities were available.

7. The conclusion then appears to be that with the present market psychology and the exigencies of investment, substantial movement in the rate of interest are unlikely to be gravely impeded by the resistances of the public. It is true, as the table appended below shows, that up to the last depression, fluctuations in the rate of interest had been very moderate.

TABLE IV

Year	Yield of Consols *	Year	Yield of Consols	Year	Yield of Consols
1849	3.25	1879	3.08	1909	2.98
50	3.11	80	3.05	10	3.09
51	3.09	81	3.00	11	3.19
52	3.02	82	2.99	12	3.30
53	3.07	83	2.96	13	3.41
54	3.27	84	2.97	14	3.35
55	3.32	85	3.02	15	3.83
56	3.22	86	2.98	16	4.32
57	3.27	87	2.95	17	4.63
58	3.10	88	2.61	18	4.41
59	3.15	89	2.63	19	4.64
60	3.19	90	2.64	20	5.34
61	3.28	91	2.67	21	5.23
62	3.23	92	2.65	22	4.44
63	3.24	93	2.59	23	4.33
64	3.33	94	2.52	24	4.40
65	3.35	95	2.39	25	4.46
66	3.41	96	2.29	26	4.57
67	3.23	97	2.25	27	4.63
68	3.20	98	2.28	28	4.49
69	3.26	99	2.36	29	4.62
70	3.28	1900	2.53	30	4.50
71	3.27	01	2.67	31	4.41
72	3.28	02	2.65	32	3.76
73	3.28	03	2.75	33	3.40
74	3.28	04	2.84	34	3.11
75	3.24	05	2.78	35	2.90
76	3.16	06	2.83	36	2.96
77	3.14	07	2.97		
78	3.15	08	2.91		

* Prices of Consols as given in the Statistical Abstract. Yields up to 1910 taken from T. T. Williams, The Rate of Discount and the Price of Consols, Journal, Royal Statistical Society, Vol. LXXV, p. 400.

Indeed the figures show a surprising stability, and, superficially, at any rate, they carry the suggestion that prices of gilt edge securities may be difficult to move over an extensive range. If investors come to consider, as during last century they had every reason to do, that Consols tend to a yield of 3%, they may evince reluctance to hold stock when the yield falls substantially below. Even so remarkable a set of figures may, however, be insufficient to support a conclusion so strong. In the first place, at the present time our experience of fluctuations

in the rate of interest has been such that we do not (as we apparently did) hold strong views as to the "proper" rate of interest. At about what level of interest rates is the market tending to establish itself over say the next ten years, or at around what level may investors reasonably expect the rate to fluctuate—3%, 3½%, 2½%? To-day we are, I think, more willing to await the judgment of events. In the second place, the figures are evidence of an absence of strong authoritarian influence upon the rate of interest, or of a monetary policy directed towards ends achievable without very great alterations in the prices of gilt edge securities. A different policy might achieve very different results. In themselves the figures are not at all conclusive. Finally, in the nineteenth century the fluctuations in the short term rate of interest were considerable without influencing very strongly the long term rate. It may well be that for technical reasons the sympathy between the two sets of rates is to-day much greater. Had it been so in the past the behaviour of Consols might have been very different.

Comparing past experience with what may be expected in the future two conclusions suggest themselves. First, that a greater speculative element may be introduced into the market in gilt edge securities, tending to accent fluctuations. Secondly, the market may come to provide stocks of more widely different investment characteristics, allowing the different classes of investors more nearly to satisfy their requirements. Thus there may come about some change both in the technique of investment and of issue. And while it is early yet to consider how these factors might influence the course of the rate of interest, they do not obviously carry a threat to the ability of the monetary authority to impose its wishes upon the market.

II

8. The rate of interest is a monetary phenomenon expressing the prices at which securities can be bought and sold and the prices at which they can be issued. The monetary authority can alter the demand for and the supply of securities in the market, and it can make easy or stringent conditions in the new issue market. Thus, whatever the consequences upon the

economy, beneficial or disastrous, the monetary authority wields a most influential control over this essentially money ratio.

9. If then we are to look at the future of interest rates we must take account, first, of the extent to which interest rates are acknowledged as results of policy; secondly, of the extent to which the functional contents of interest rates are recognised; thirdly, of the extent to which policy is interested in the consequences of interest rates; and finally, of the consequences in which policy may be expected to interest itself.

As to the first, virtually nothing need now be said. Governments which manipulate interest rates in the interest of national debt services are unlikely to overlook their influence. Such a new weapon in the armoury of control is not likely to grow rusty. The only question is the use likely to be made of it.

As to the second point, there will now be little dispute as to the general character of the part played by interest rates in the economy. The question is not "Do governments realise how low rates stimulate and high rates impede or inhibit activity, or low rates encourage higher and high rates lower prices?" It is rather "Is the manipulation of interest rates the way which will be chosen if the general results manipulation will help to achieve are in fact desired?" Or will governments choose other methods; when boom threatens to reach too high, talking loudly to shake the scaffolding that is supporting it, raising prices by inducing rises in money costs, encouraging activity by deficit creation and so on. These methods may be either incompatible, under certain conditions, with the attaining of objectives through the appropriate alteration of interest rates, or they may make the requisite manipulations unnecessary. Thus, for example, deficit creation may (I express no opinion) prevent a lowering of interest rates (as it seems to have done in France) or it may not (as appears to be the case in the U.S.); but it is hardly likely to make it be considered unnecessary. On the other hand, control by exhortation may make interest rate manipulation unnecessary, and indeed may be to that end. There are two facts which are relevant in this connection when we try to discover the implications of the

connection between policy, interest rates, and their consequences. The first is that governments have a vested interest in low rates and will be unwilling to abandon them if the consequences are unpopular ; the other is that the control of economies is still experimental in the highest degree. The technique of control is unmapped. All methods are possible and, under favourable conditions, many might achieve success. Empiricism is then, the likeliest policy and unpredictability a likely consequence.

10. As regards the third point, two observations suggest themselves. There are certain objectives of control about which no government can be oblivious. Governments, in part at any rate appointed to rectify economic difficulties and attributing to themselves the solution of them, can hardly be unconcerned at the prospect of slump, whether that appears in the guise of recession or of boom. But it is one thing to have intent; it is another to have perception, to say nothing of technique, which does not here concern us. We may, for example, say that a government will wish to reduce interest rates to avert a slump, but will it be able to perceive that point in prosperity (if there is one) at which a slump may be averted or most mitigated if interest rates are reduced ? Will it, for example, be tempted to reduce interest rates too soon and perhaps add fuel to the fires of excess, or will it avert this danger only to delay action unduly and, as I think sometimes was the case in the nineteenth century, cause greater depression. The first mistake would tend to make necessary a subsequent higher interest rate, the latter a subsequent lower one. Thus, there may be a considerable difference between the course that interest rates ought to follow for maximum benefit and the course that perception will allow, given the same intent. Moreover, it is a question whether optimum policy is always identifiable. How should interest rates be lowered in the slump ? There is the old controversy, still debated, whether their fall ought to be immediate or delayed. There is also the question whether the fall ought to be the maximum possible or whether it should be more moderate. In a bad slump, such as the last, that question might not arise ; it is a matter of doubt whether interest rate

policy will be effective. But in a less desperate position, the pace of recovery, the excesses it generates, the rise in prices and the relative stability of the prosperity obtained may well be a function of the skill of control. To know what to do and to know when to do it are, perhaps, only less necessary than the will to do it. But so long as they are in doubt what to expect is equally so.

11. There are other objectives in regard to which the will to act is more in question. It is an obvious object of policy to maximise, so far as may be, the wealth-producing activity of an economy. But the regulation of price levels has no such ready-made end. It is indeed true that price control is to some extent a corollary of the control of economic activity. Thus governments may reasonably be expected to resist falling prices in times of trade inactivity if only for the reason that they know the weight of the vicious spiral of deflation ; to an unknown, but probably less extent, they will resist the rise in prices that is associated with the excesses—however they are defined—of increasing production. Thus government may perhaps be presumed to look kindly upon a compensated dollar, pound or franc, but that throws no light upon what the "index of compensation" shall be.

12. It is worth while to explore this matter, and for convenience we will refer what is to be said to the position of this country. If our monetary policy is likely to be directed only to the maintenance of economic activity, then whatever the reactions upon the price structure, it may be affirmed that they lie outside policy. If it means that they must follow a rising tendency, as for sociological reasons one might expect, or that they remain constant, or fall, as a more academic view might lead one to suppose, the results will be accepted as incidental to a desired end. In certain circumstances, it may, however, be desirable to interest oneself in the level of prices, and to set up some goal, definite or indefinite, at which one should aim.

At the present time in this country, interest in the general level of prices would seem to result mainly from two factors : the first, the fiscal problem presented by the public debt, and secondly, the problem presented by our foreign trade position.

There is not space here to enter into a detailed analysis of these matters : a broad outline will suffice to indicate their relevance. One may regard the national and public debts as being potentially burdensome for three reasons. First, because even at present they complicate budgeting in times of sub-normal trade. Whether or not we could be educated out of the prejudice, we do not as a nation take kindly to deficits. We are apt at critical times to take an axe to our expenditure, with results undesirable to the economy and to humanity. Hence a budgetary situation more stable in times of depression would tend to have less deflationary implications. Moreover, to those who see in deficit budgeting a remedy for depression, the national debt must be an obstacle in that it makes borrowing politically difficult and deficits more compromising to the credit of the State. Secondly, the present size of the budget leaves little margin for expansion in expenditure, though on whether the reason for this is political or economic we will attempt no opinion. Whether healthy or not, the tendency is for the State to control an increasing proportion of the national dividend. In the circumstances of modern civilisation, there is a demand for services and amenities that apparently can only be provided authoritatively. Thus, whether the State is to spend out of revenue or out of borrowed funds, there is a prospect of increasing expenditure. A brake upon social services, public amenities and needed investments would generally be regarded as undesirable. Moreover, it may be dangerous to economic stability for it to be impossible for the State to choose between financing its expenditure through loans or taxation. Thirdly, all this is complicated by the prospect of a declining population. Our public debt is not an unsufferable burden with a population of 45,000,000 ; it would be if the same price structure ruled when the country had a population of 20,000,000. It may, therefore, be a not unreasonable policy to work for a steady and continued rise in prices. It would not be an equitable policy perhaps, but it would be less inequitable than sudden inflation or repudiation.

13. At the present time we are faced with a considerable adverse balance of payments that has persisted, with one

interruption, since 1931. During the years of depression, when we obtained our imports cheaply, and when our exports were relatively dear, we bought so much and sold so little that the balance was adverse. In 1936 and 1937 when imports became relatively dear, they cost us so much that again we experienced an adverse balance. There is, therefore, the suggestion that our economy is not in harmony in its international relationships. While this is not a matter about which we need feel very strongly at the present time (because it is not indicative of immediate disorder), it is clear that adverse balances tend to aggravate themselves. A country which lives on its capital reduces its income. This problem (when and if it is recognised as and admitted to be a problem) is one for which a solution is only likely to be found in governmental action. One possible line of action is to be found in the manipulation of the price structure. A reduction in prices here relatively to the generality of prices in other countries, whether brought about by an absolute fall here or by a relatively smaller rise, would initiate forces working towards equilibrium. But although the orthodox and time-honoured method, the use of interest rates and the alteration of price structures for the rectification of foreign balances is by no means the only one. Deliberately pursued alterations in exchange rates and tariff policies offer alternative methods, whether or not they promise success.

Considering the four points mentioned above in relation to the possible impact of this matter upon the movement of interest rates, one can say straight away that the connection between interest rates and balances of payments is recognised, and that, when some degree of adversity is reached, policy does interest itself in these problems. What is unknown is the willingness to use interest rates for these purposes and the efficacy of other methods. Thus, it is possible that during a period of rising world prices, an attempt would be made towards a delicate use of interest rates that would keep the domestic rise of prices in check ; on the other hand, during a depression recourse might be attempted towards depreciation of exchanges and/or a control of imports by tariff policy. In itself, it will be admitted, this is a difficult problem in applied economics.

14. Thus, whether or not admitted at the present time, there are other ends towards which monetary policy may be directed than regulating activity. The most immediate function of the rate of interest may be the regulation of trade, but, more or less urgent, there lie in the background the questions of the general price level, of the balance of payments, and of the financing of the national debt. The control of activity and the minimising of pressure upon the budget are factors that must obviously be reckoned with—but casting an atmosphere of uncertainty over the effect which regard for these two matters will have, is the importance which will be attached to the two other long-term problems. Will desire to promote a rise in prices make that difference to policy which lie between avoiding boom and promoting it ? Or will a concern for the balance of payments make our handling of a deteriorating trade condition uncertain ? Or will the difficulty of solving all these problems by one inadequate instrument encourage the resort to others with as yet unforeseeable consequences ?

15. These, then, may be said to be the elements upon which the course of the rate of interest depends. The essential element is a power which has long been in existence but which has been relatively restricted in use, namely, the ability to control the monetary system. This element is more or less important according to the view taken of the willingness of individuals to be relatively passive in their acceptance of an authoritarian coercion of interest rates. If people rebel at too active a movement of the rate of interest (impelled by the State in conformity with its views on the functions of interest rates), then this is an additional factor which must be taken into account when the future is in question. If, on the other hand, it is considered that people are so much concerned with the immediate future that they tend to follow movements rather than resist them, then the future is so much simpler to read, and the second element becomes of predominant importance.

Instead of paying regard to how people will behave, attention must then be concentrated upon the possible policies

of governments. In itself, this is sufficiently difficult, particularly when policies equally reasonable necessitate views of the future that are mutually exclusive. But prognosis of policies demands in addition some kind of view upon the economic circumstances in which policies may mature, and upon the ability of government to carry through policies which may reasonably be attributed to them. Heretofore, investment policy has demanded economic forecast, but the further complication is added on this view of a political forecast which may reasonably be made on the basis of economic forecast, together with a view on the ability of governments to implement policies attributed to them. The forecasting of policy must remain an exceptionally difficult matter. Ideal policy is itself difficult to determine—ought we, for example, to have raised interest rates at the end of 1936 or in the early months of 1937 as some authorities thought ; ought we to-day to consider the lowering of interest rates against a possible slackening of activity? These questions are concerned only with one aspect of the consequences of interest rates. The same questions could be asked for the three other aspects, and the difficulty of finding an answer would be multiplied. But the forecasting of policy does not have to concern itself only with the ascertainment of ideal solutions ; it must consider expedient solutions also. In short, the difficulty of forecasting the movements of the rate of interest is a reflection of the difficulty of deciding how it ought to behave and of the difficulty of ensuring that it behaves as it ought. The investment problem of the individual is involved, at least, to the extent that the economic problem is involved to the authorities.

16. There is one conclusion of social importance. The difficulty of forecasting the behaviour of the rate of interest is likely to leave the authority relatively free to mould it to its own wishes. Thus, if through the rate of interest, there is the possibility of improving the behaviour of the economic system the way to experiment is likely to be relatively free. The conclusion of the first part of this paper is reinforced. On the other hand, if manipulation of the rate of interest proves less efficacious

in guiding the economic system along desired lines than was at one time hoped, and if sterner measures of control come to be adopted, the problem to investors is likely to remain, though it may be made easier. For monetary policy appears to be accepted as an adjunct to control, even though it may only aid other methods largely but not entirely untried in this country.

J. Stafford

State Control of Industrial Location

Since 1928, when the Industrial Transference Board was established, there has been official recognition of a problem of localised unemployment in this country. In the decade after this initial measure designed to facilitate "the transfer of workers, and in particular of miners, for whom opportunities of employment in their own district or occupation are no longer available," the problem has become more clearly defined as one which results from fundamental changes in the industrial structure of the country, and which does not allow of immediate spontaneous solution ; the decline of the staple industries, with consequent heavy localised unemployment, is now accepted as almost inevitable. The persistence of a high level of unemployment in the depressed areas has resulted in various government measures designed to assist the areas in the process of readjustment to changed conditions. The Ministry of Labour has developed various schemes of transference, coupled with training schemes—a necessity in that mobility of place usually involves change of occupation. Certain of the depressed areas have received special assistance under the Special Areas Act of 1934 and the Amending Act of 1937. These measures have not, however, provided a complete solution of the problem ; in some ways they are still of an experimental character, while they have not been of sufficiently broad application to do more than deal with parts of the problem. Perhaps more potent a factor in alleviating the conditions of the depressed areas is the present boom. This, however, cannot provide a permanent solution. It may, it is true, make less difficult in some directions the process of transition, but, on the other hand, it may create further difficulties in others. In any case, it has not even temporarily removed localised unemployment. Some of the depressed areas have not recovered their positions of 1929. Thus, for example, Glamorganshire had 21.7 per cent. of its insured workers unemployed in August this year, as against 19.7 per cent. in June 1929 ; Durham had unemployment

percentages of 17.6 (1937) and 16.1 (1929), Cumberland 18.5 and 15.1, Lancashire 13.6 and 13.0, and Lanarkshire 17.2 and 14.4. It is true that in some of the depressed areas the absolute numbers of the unemployed have fallen, as the insured population has dwindled ; but the concentration of a large proportion of the unemployed in the depressed areas continues. Analysis of the geographical distribution of unemployment shows, in fact, that, so far as any general movement can be traced, there has been a progressive deterioration of the position of the depressed areas in relation to that of the prosperous regions. There is now a greater dispersion about the average level of unemployment than there was either in the prosperity of 1929 or in 1933, at the bottom of the slump. On the whole, the depressed areas now show a greater concentration at a level higher above the average, and the prosperous areas the same feature at a level more below the average, than was the case in these two years of prosperity and depression.

This is not a result which should occasion any surprise, for the position of the depressed areas is largely due to a secular decline in their staple industries, while the prosperous areas owe a great deal of their prosperity to the growth of developing industries. The problem is thus one of locational change, and understanding of it must proceed by way of knowledge of the causes of the divergence in location of the declining and the expanding industries. It is realisation, perhaps unconscious, of this that has led to demands that the State should attempt to solve the problem of localised unemployment by the direct method of controlling the location of new plants, instead of by indirect methods of encouragement to industrialists to establish plants in the Special Areas or by the different method of transference, which has numerous attendant difficulties and undesirable features. It is the purpose of this article to examine some of the implications of such control. Before entering this field of discussion, however, it is necessary to give some indication of the extent and process of the changes.

Almost the only method of measuring the re-distribution of industry is to measure changes in the distribution of workers ;

this is the only measure for which adequate data are available.[1] Two sources of information can be used, the Census of Population and the statistics collected by the Ministry of Labour in connection with the Unemployment Insurance schemes. The former has the advantage of being complete, but the disadvantage of providing no data for the period after 1931. The latter source provides information of fairly recent date, but covers only a proportion of the occupied population. There are also various limitations of a minor character ; it is only a broad picture which is needed here, however, so that many points of detail can be ignored. The country can be divided into two regions, "North" and "South," it being broadly true that the former comprises all the depressed areas and few areas of prosperity, and the latter all the prosperous areas and little depression. The following Table shows the re-distribution of population between these two regions, on the basis of Census data, from 1921 to 1931.

TABLE I

ENGLAND AND WALES

CHANGES IN THE REGIONAL DISTRIBUTION OF POPULATION, 1921-1931

	Percentages in "North"		"South"		Unclassified
	1921	1931	1921	1931	1921
Total Population	40.5	39.2	59.5	60.8	—
Occupied Population ..	40.5	39.1	59.5	60.9	—
Manufacturing Population..	45.6	43.7	51.5	56.3	2.9

"North" comprises the following Census regions :—North I - IV, Wales I and II.

"South" comprises :—South-East, Midland I and II, East, South-West.

Manufacturing population comprises Census Orders IV to XIV, excluding XIII. It thus excludes mining ; building and contracting ; commercial, professional, financial, and personal services.

The 1921 returns are based on "place of work" and include an item "No fixed place of work or place of work not stated" ; this accounts for the unclassified item of 2.9% in the manufacturing population. The regional distribution of the total occupied population, however, is given. The returns in 1931 are based on "place of residence," so that no difficulty arises.

[1] Some other data are available in the Census of Production of the United Kingdom, but these are not sufficiently comprehensive to be the basis of an independent analysis.

This shows a re-distribution of population in favour of the South ; it will be noted that the degree of change in the manufacturing population was greater than it was in either the total or occupied populations. It would, of course, be erroneous to regard this simply as a result of transfer from one region to the other ; there are numerous factors at work, such as the drawing into industry in the South of persons previously without occupation, or the effects of differing age-distributions, and these figures merely show the final outcome of a number of changes.

These Census figures take no account of unemployment, and it is obvious that this factor must be included in showing the re-distribution of industrial activity. The Ministry of Labour figures of insured persons in employment can be used to indicate the changes, allowing for this factor, and showing the movements up to 1936. The following Table gives the data for Great Britain, again divided into "North" and "South", the latter region being almost identical with that used in the Census, the former having Scotland added.

TABLE II

GREAT BRITAIN

CHANGES IN THE REGIONAL DISTRIBUTION OF INSURED WORKERS IN EMPLOYMENT, 1923-1936.

	Percentages of total in "North"	Percentages of total in "South"
1923..	52.6	47.4
1927..	50.4	49.6
1929..	49.3	50.7
1934..	45.9	54.1
1935..	45.5	54.5
1936..	44.9	55.1

"North" comprises the following Ministry of Labour Divisions :— North-Eastern, North-Western, Scotland, Wales.

"South" comprises the following Divisions :—South-Eastern (including London), South-Western, Midlands.

The figures are based on the persons returned as insured in June each year, less those recorded as wholly employed at the same date.

Workers insured under Special Schemes are excluded.

Figures for the years 1923 and 1927 refer to workers aged 16 years and over ; for other years to workers aged 16 to 64 years.

The unequal incidence of unemployment is reflected in the greater degree of re-distribution indicated by these figures than that shown by the Census data. It is also seen that the trends have continued since 1931 ; further, the changes are continuous, the "North" showing a decreasing, and the "South" an increasing, proportion every year.[1]

The importance of the changes in the declining and the expanding industries in the process of re-distribution can be indicated by the Ministry of Labour figures. Unfortunately, the necessary information is not readily available. It is necessary to have employment figures for each of the industrial classifications of the Ministry for each of the Divisions ; none of these are available, the Ministry publishing figures for the whole country only. Some information has, however, been made available in special returns, for the years 1924 and 1934, for three of the "southern" Divisions (London, the South-East, and the Midlands), for the Wales Division, and for two of the depressed areas surveyed by the Universities in 1931 (the Lancashire Industrial Area and the North-East Coast). Thus, although the data are not complete, they are adquate to give some indications of the character of the changes. Between 1924 and 1934, in fifty-seven of the one hundred industrial groups into which the Ministry classifies all insured workers the numbers of employed workers increased ; these are regarded as the expanding industries. The other forty-three, in which the numbers employed decreased, are the declining industries. The following Table shows the changes in employment in these two groups of industries in the areas for which the information is available :—[2]

[1] The figures for all years are not given in the Table.

[2] The same classification of declining and expanding industries is applied to all areas. Some industries which expanded in the country as a whole showed decline in certain areas, while some "declining" industries expanded in particular areas. Thus it might appear necessary to use a separate classification for each area. The results of this are so very little different from those given on the basis of a single uniform classification, however, that the gain in precision would not balance the loss in simplicity involved. The total changes in each area are, of course, identical under both methods.

TABLE III

UNITED KINGDOM AND SIX AREAS, 1924-1934

CHANGES IN ESTIMATED NUMBERS OF INSURED WORKERS EMPLOYED, JUNE EACH YEAR

	Decrease in declining Industries	Increase in expanding Industries	Net Change	Employment in 1934 1924=100
United Kingdom	1,310,242	1,722,310	+412,068	104.0
London Division	37,937	427,511	+389,634	121.1
South Eastern Division ..	12,005	241,826	+229,821	131.2
Midlands Division	151,327	250,632	+ 93,305	106.3
Lancashire Industrial Area	212,137	116,373	— 97,764	92.4
North-East Coast Area ..	153,319	50,452	—102,867	83.2
Wales Division [1]	199,686	24,053	—175,633	73.2

[1] 1924 to 1933. Figures for 1934 are not available.

These details show clearly that the depressed areas have been faced with a problem of re-adjustment involved in their former dependence upon industries which offer a declining field of employment, the growth in their expanding industries being inadequate to compensate the loss of employment in the declining industries. On the other hand, the prosperous areas have no such problem ; the declining industries are of much less importance, the dominant feature being the importance of expanding industries. The revival in certain of the declining industries since 1934 has, of course, to some extent modified this, but the position has not been substantially changed. It should be noted that rates of growth in the expanding industries, and rates of decrease in the declining, have been of comparatively minor importance ; there is, for instance, no general marked divergence between the rates of increase in employment in the expanding industries for the prosperous regions and those for the depressed areas. The chief feature has been the relative importance of the two types of industries in the areas concerned ; on the one hand there are areas dominated by the older staple industries, having to face a serious problem of re-adjustment, and on the other, there are

areas which have no such problem, the growth of the newer industries resulting in a normal process of development of the areas.[1]

A feature of some importance is the part played by various "services" in the growth of employment in the expanding industries. A considerable part of the workers in the expanding industries are engaged in occupations which must be regarded as secondary in the development of an area, in that they depend upon the existence of a population demanding the appropriate services, as distinct from those occupations which result from primary industrial development which will attract population to its own location.[2] Among the expanding industries there are ten such services, including such occupations as distribution, local government, tramway and omnibus service, other road transport, and professional services. In 1924, these services contained 29.3 per cent. of the insured employed workers in the United Kingdom, and the figure had increased to 38 per cent. by 1934. There are considerable differences in the importance of these services in different areas ; generally, it is found that they are more important in the South than in the North. This is also true of their rate of growth during the decade ; for the areas discussed, growth in employment in the ten services accounted for between one-half and two thirds of the expansion in the expanding industries, the lower figure being approximately that for the depressed areas and the higher that for the prosperous regions. Some part of the re-distribution of employment can thus be explained by this secondary feature of the greater growth of services in the South than in the North.

The aim of State control of location would be to check these trends of re-distribution of employment. The indications of the character of the changes which have been given suggest that this is not the simple matter which it might appear to be at first sight. Popular imagination is dominated by the fact of plants being established in areas which are already prosperous, while the other areas sink still deeper into permanent depression;

[1] Cf. "Re-adjustment in Lancashire," by Members of the Economics Research Section, Manchester University (1936), pp. 51-52.

[2] The line here cannot be distinct ; there are many cases of difficulty. The main distinction, however, is valid and important.

hence the proposal that by a system of licenses for new factories the stream of new enterprise should be diverted to those regions which need it most. The matter is not so simple as is thus imagined, however. The fact that the development of services has been such an important part of expansion in employment is immediately obvious as a limitation on the effectiveness of such a policy of control. It is manifestly impossible to divert such development to the depressed areas, as it is entirely dependent upon the character of the areas to which it belongs. Further growth in this direction in the depressed areas must wait upon the development of "primary" industries, and cannot be directly stimulated by intervention. In this way alone, a considerable part of the field is put outside the scope of a scheme of control. Development of such services in the depressed areas could, of course, be an incidental effect to the results of such control, but it must be ruled out as an immediate and direct result. Control would thus have to be directed to the diversion to the depressed areas of those trades which do not serve directly the needs of particular centres of population. Even here there might be some difficulty in that some industrial development could not be divorced from the area in which it originates. In many respects it is essential to regard the development of a particular area as a whole ; to believe that plants can be placed like pieces on a chess-board is to misconceive many of the elements which result in their origin. A study of the development of almost any area shows a process of continuous change and growth. The Midlands provides probably the best example of an area continuously adapting itself to changing conditions,[1] turning from one product to another, individual firms branching out into new products as the demand for their old products declined, new industries developing from old, new firms growing out of the already existing structure—in short, that process of "industrial metabolism" which is one of the normal ways of growth. Other areas show similar characteristics ; Lancashire, for instance, provides a large number of cases both of individual firms adapting themselves to changed conditions, and of new

[1] Cf. G. C. Allen, *The Industrial Development of Birmingham and the Black Country*.

industries growing out of those already established. A considerable part of the re-distribution of industrial activity can probably be attributed to this feature ; the depressed areas are largely dependent upon a few staple industries which offer little scope for a process of industrial diversification and growth, whereas the prosperous areas show more diverse industrial structures which are more fruitful ground for such a process. It must also be remembered that the expansion of plants already in existence is an important feature in development, which does not depend entirely upon the creation of new plants. In view of these features, it would seem that any attempt to divert some part of industrial development from the areas which created it would involve its being still-born.

In spite of these limitations, however, there is some part of the field to which control would be appropriate ; some development, though not all, could be diverted to the depressed areas. Such diversion would, of course, lead to further development in the depressed areas, the process being cumulative. This, however, is a result over a fairly long period of time, and it remains true that control as an immediate solution is of limited effectiveness.

Apart from certain considerations of a more practical character, the chief element to be considered in discussing the appropriateness of intervention must be that of cost, whether the gains derived would outweigh the costs involved, or *vice versa*. It is not possible to measure precisely either of these two items, so that it might seem impossible to arrive at any decision about which way the balance lies. There are, however, certain general considerations which give some grounds for presuming that the balance lies in one direction. Little need be said about the gains which would result from the solution of the problem. The social evils of localised unemployment are very great, and it is desirable that these should be removed even at some cost to the community. It is also possible that a greater degree of development in the depressed areas would result in a net increase in employment ; the fact that employment is a function of various factors and not a static quantity, so that diversion from the prosperous to the depressed areas would not be a simple

process of taking from one to give to the other, need not be laboured. There must also be included the saving of social capital ; at present there is waste in the depressed areas accompanied by duplication in the developing regions. Something should also be allowed for the saving in administration of various public services in the depressed areas consequent upon their return to prosperity. There are other items, some less tangible, but it is sufficient to note that solution of the problem would give considerable economic, and perhaps greater social, gains.

Against these must be set certain costs. Those incidental to the administration of a scheme of control can be neglected. They would not be great, and certainly not greater than those involved in the organisation of the various services at present employed to alleviate some of the problems of the depressed areas. The element of importance is the possibility of control involving industry being badly situated, so that output would fall, or be maintained at greater cost. [1] It is impossible to arrive at a decision on this point without considerable knowledge of the factors which determine location in the absence of intervention, and which have resulted in the changes of the past decade. It was argued in a previous article[2] that the existing theories of location offer little of value for the analysis of these changes, and that it is necessary to have much more comprehensive knowledge of the processes of change than is at present available. The analysis which follows is partly based upon detailed investigation into the factors which have influenced the location of a large number of particular plants, in various industries and in different parts of the country. Although such a method of approach cannot give the complete knowledge that is desirable, it is claimed that, supplemented by the general knowledge of the changes which is available, it does provide indications of the factors which are important, and of their relations with each other. It is perhaps unnecessary to stress the need for further investigation to yield more certain and complete results.

[1] Even after allowing for the fact that there are at present idle resources partly maintained at the cost of the community.

[2] See *The Manchester School*, vol. 8, No. 1, March, 1937.

The first essential step is to regard location as a problem of efficiency, or cost. To quote the article previously mentioned, "For any plant about to be established, with a given output and conditions of technique, there are many possibilities of situation. Each situation has, however, its own particular cost for the output and conditions of technique, and the costs of each situation differ from those associated with the others. It is thus possible to conceive of the various possible locations as being arranged in a scale according to the level of cost per unit of output associated with each." The matter can be carried further, and the concept of an "ideal" location for each plant introduced ; this is, of course, that location which would give the lowest cost for the output. There are many factors which influence this level of cost. It is possible to make a distinction between "technical" and "economic" factors, but this is one which is often blurred. The former would include, for instance, the situation of raw material supplies, but this itself is a factor which is not independent of economic factors, such as the location of plants already existing, or the distribution of population. For some purposes such a distinction is useful, but for the present it is not essential, so long as it is remembered that the factors are numerous and include the elements of the existing patterns of location and population as well as the more technical factors.

Corresponding to this ideal location for the individual plant, there is the optimum pattern of location, in which every plant is ideally situated, and the cost of the total output of the system is at a minimum. The optimum is not conceived of as solely resulting from technical factors ; if it were, then the solution offered by Weber would be applicable. It is again, however, as much dependent upon economic as upon technical factors, and upon the interactions between these. It is the pattern which gives minimum cost under the given conditions, and not one which is ideal in an absolute sense. Thus, for instance, if we assume that the actual pattern of location corresponds with the optimum, then a new plant which was established at a non-ideal location would not only involve departure from the optimum of that moment, but would also change the

optimum for the future, in that it would affect the ideal locations of all future plants which were related to it. There may also, of course, be more than one optimum pattern, just as there could be more than one ideal location for the individual plant. It is possible to elaborate this analysis, and to give it a much greater degree of precision ; it is, for instance, partly susceptible to treatment by a series of differential equations. As its edge must be considerably blunted in applying it to the problem under review, however, such precision must be purely formal, and it is unnecessary to proceed further than the idea of there being a locational pattern which gives minimum cost under given conditions.

It is now necessary to enquire, first, whether there is any divergence between the optimum and the actual patterns of location in the absence of intervention, and, secondly, whether intervention would increase or decrease such divergence. This latter is, of course, the fundamental question of whether control of location would involve costs to the community through industry being badly situated.

There are a number of factors which will tend to lead to divergence in the absence of intervention. One which has received great emphasis is the supposed domination of location by the caprice of the entrepreneur. The desire of the industrialist to have his plant situated in a pleasant place, convenient to his home (and to a city with its shopping facilities, and so on, for his wife), has become a common explanation of the "drift of industry to the South." Needless to say, it is an explanation which is superficial and based on somewhat reckless generalisation from a few striking cases ; it is, however, necessary to give it some attention, if only because there have been such cases which have excited the attention of economists, as well as of journalists and publicists. There is immediately apparent at least one serious objection to this view that location depends upon the arbitrariness of the entrepreneur, and that is that it does not seem possible to explain general locational trends in this fashion. Clearly, if this be a true explanation, there must be at the present time some form of mass psychological influence. affecting the majority of entrepreneurs in the same way when

they consider the question of the situation of a plant. This is, of course, not impossible, but the case has to be proved before it can be accepted. Further, there are some divergent movements in different industries, and these are difficult to explain in such terms. Another objection, and one which carries more weight, is that it is possible to find other explanations of change.

There are also certain assumptions implicit in this view which are less obvious than the objections just considerations. First, although the presence of other factors would be admitted, though perhaps not in all cases, it is assumed that the arbitrary element is sufficient to over-rule these. The argument further appears to assume that the other factors operate in a different direction from the personal preference of the entrepreneur, that, in fact, the entrepreneur establishes his plant in a bad situation from the point of view of cost, that he would operate better in the North, where he "ought" to go, but instead he chooses a site near, say, London. This may be true in a certain number of cases, a few of which could be mentioned, but there are no grounds for considering this to be the general case. So far as is possible to judge from investigation, it appears that it is more usual to find coincidence of these two elements of cost and personal preferences. This is not, of course, perfect, but it can be said that the personal choice of the entrepreneur, with some exceptions, must coincide with the general conditions of the best location from the point of view of cost. It must be remembered that there is never (or very rarely) one ideal location ; there will always be a wide range of possible situations, each of which, although with different relative groupings of the various factors, will give similar results as regards costs, so that there is scope for considerable variation in the final decision. Nor is it in any degree remarkable that there should frequently be coincidence, for, as has already been emphasised, one of the most important forms of industrial growth is development from an existing structure. Industries do not rise spontaneously from a vacuum ; it should not be considered surprising that an entrepreneur should build his plant in the area to which he belongs and in which he already has industrial connections, and which is also a suitable environment for the industry. The

importance of the growth of small firms is another factor which is relevant here. These considerations can explain a considerable part of the industrial development of the South. They are weakened in detail, it is true, when the activities of large firms with many plants are considered, but here again it is not necessary to assume divergence between policy and considerations of cost ; it seems, for example, that the larger combines consider the question of location with some care.

A second assumption, which, although it is usually unrecognised, can be considered largely valid, is that when arbitrary elements do outweigh cost considerations which indicate a different location from that which is chosen, there cannot be perfect competition. The degree to which this is true will vary according to the industry concerned, and also according to the special circumstances of the particular firm. On the whole, however, this fact of imperfect competition makes possible some degree of arbitrariness in decisions respecting location, and it is not difficult to find examples. At the same time, however, the degree to which this will occur depends partly upon a third element, which appears to be entirely neglected by the cruder view. This is the degree of cost involved in a divergence between the location determined by by personal preference and that of lowest cost. *A priori* it would appear that, when the cost of divergence is considerable, the cost factor would dominate, so that arbitrary decisions would become important only when the cost involved is relatively small. The more imperfect is competition, then the greater is the margin of cost which can be ignored in making a decision ; but this is not the same as saying that a greater amount of cost *will* be ignored, for this depends upon the individual decision of the entrepreneur. This is a field where little is known ; but, on the basis of the investigation so far undertaken, it appears reasonable to state that divergence will usually occur only when the cost involved is comparatively small.

Thus it is concluded that the arbitrary element in locational decisions is not the dominant feature which it is at times made to appear. It must, however, be admitted that it does exist,

that it may enter into most locational decisions, even though in a subsidiary position. Thus it is one cause of divergence between actual and optimum patterns of location, and though the direct effect of each decision may be small, cumulatively the results may become considerable as the pattern of location is continuously affected.

A second cause of divergence between actual and optimum patterns of location is imperfect knowledge. Although the broader distinctions between locations involving very high costs and those associated with low costs will usually be fairly obvious, there is room for error when the differences are small. It is, in fact, greatly to be doubted whether many firms do consider with very detailed care the question of location of a new plant ; it is more usually the case that only the most obvious factors are considered, and the decision taken on the basis of the broadest considerations. It is possible to find firms which have carefully calculated the costs likely to be associated with a number of different locations (this is done by at least one large combine) but these are the rare exceptions. There is, however, some justification for this in that there is a second source of error which could nullify the effects of such careful calculations, in that it is almost impossible to give any accurate forecast of the development of the plant. The entrepreneur does not know the eventual size of his plant ; nor can he forecast in detail his markets ; his sources of material supplies may frequently change, and so on. It is quite possible that the ideal location for one output may not be ideal for another, and it is possible to find cases of firms which have been either optimistic or pessimistic about their rate of growth and find themselves in situations which, though suitable for their expected outputs, are not the best for the sizes which in fact they have attained. The bearing of changes in markets, in supplies of materials, or in any of the commonly recognised elements in location, upon the matter will be obvious and need not be elaborated. There is here an obvious source of divergence. Its scope will again be enlarged by the presence of imperfect competition, and again it is possible to find actual cases of this.

A third, and perhaps less obvious, factor which may cause divergence is the difference between the private and social costs of output. The optimum pattern of location is that which involves minimum total costs, but it may be the case that a different locational pattern involves lower costs to industry, with other costs being met by the community. Thus the present advantages of the South for industrial development may exist partly because certain costs which accompany the process of change from North to South are met by the State and not by the individuals who are establishing plants. The provision of the various facilities and services necessary for town development has already been mentioned, but there are also other items. One is the cost involved in transferring workers from the depressed areas, and in the provision of training for the new recruits to industry in the prosperous areas. Had this not been borne by the State (and also, of course, by the individual migrants in the case of non-assisted transfer) the individual entrepreneurs would have had their costs increased, and the South would have been a correspondingly less suitable location. It is, indeed, difficult to see how development could have been so rapid without the administrative machinery made available by the State for these purposes. It is also possible to regard the cost of maintaining a large surplus of labour as one which belongs, at least in part, to locational change. This field is one which is very extensive, and it cannot be doubted that the possibility of throwing some of the costs of industrial change on to the community allows of divergence from the optimum pattern of location.

Probably the most important cause of divergence, however, is the process of industrial development and change. The optimum is never constant, but is continuously changing as the many and various elements which determine it alter. Some types of such change can be isolated. One is change in technique, and of this there are many examples. The iron and steel industries offer one striking case of changing location due to developments in technique and associated changes in sources of raw material supplies. Another obvious case is the cement industry, especially in the United States. A second element is

change in raw material supplies, which is continuously occurring; here it must be remembered that many plants use the products of others as raw materials, so that the degree of change will be greater than if raw materials were solely natural products. The market is another factor to be considered. Changes here will occur not only with the more fundamental changes in the distribution of population and of purchasing power (which are to a great extent a function of the pattern of location), but also with alterations in the relative positions of various plants in their competitive markets. It must also be remembered that the very fact of the establishment of a new plant must influence the optimum, for this depends partly upon the relations of plants with each other, while every plant must have some effect, however, slight on the distribution of output, of population, and of income. Thus it is that the development of an area may be cumulative, and what may originally have been a departure from the optimum, perhaps due to error, may eventually become an ideal location for other plants and industries. For these, and other less general, reasons, it is necessary to conceive of the optimum as being subject to a process of continuous change.

The actual pattern of location cannot, however, be subject to this process. Changes in location are, of course, continuous ; they occur not only through the establishment of new plants and the disappearance of old, but also by the more gradual processes of growth and decay.[1] Nevertheless, there are various elements of friction which delay changes, and result in the response to changed conditions of location taking directions other than a change of situation. The chief of these is the presence of capital equipment. A change of situation involves certain costs ; there are the costs involved in the sacrifice of certain existing equipment and buildings, in the process of moving, and the provision of new buildings. The disorganisation which accompanies a change is important, perhaps involving some loss of trade connections. There may also be a cost involved in the movement of workers, or in the building up

[1] It is impossible to measure these changes, as there are no suitable data available. Birth, death, and "morbidity" rates for certain industries in the United States have been calculated ; see C. Goodrich, *Migration and Economic Opportunity* (Philadelphia, 1936).

of a new labour force. These items form a considerable total, and, in investigating the matter there were found many firms in situations which were now unsuitable (although suitable when the firms were established) and which would gain considerably by moving ; the costs would be so great, however, that they would not be offset by the gains. One firm, for example, would have had to double its capital, and to suffer a virtual cessation of output for about a year, the time taken for removal. This figure, of capital being doubled, was found to be the case in many of the firms investigated ; in some the item was greater, but it was less in very few. A number of cases in which removal had occurred were investigated, and it was found that they fell into one of two categories. Either capital equipment was negligible, and movement easy (also it was generally helped by other features, such as in a seasonal trade, where stocks could be accumulated in preparation for the change), or the reverse was the case and movement was difficult. The former probably covers most of the cases of movement recorded by the annual *Surveys of Industrial Development* conducted by the Board of Trade ; there is, in fact, a fairly high degree of mobility among the smaller factories in certain trades.[1] In the latter category, however, it was found that a change in location was invariably accompanied by changes in other directions. In fact, removal was part of a more general scheme of re-organisation, under which most of the costs associated with movement would have been incurred even if there had been no movement (e.g. renewal of capital equipment). In such cases, and they cover a large part of the industrial field, removal only accompanies other changes. In the absence of these, then the response to changed locational conditions will take forms other than a change in situation. The existence of imperfect competition will again extend the scope of this. Thus it must be concluded that changes in location will lag behind those changes in locational conditions which have an immediate effect on the optimum.[2]

[1] Compare, for example, the large number of transfers in the London area, recorded by the *Surveys*.

[2] A very good illustration of an individual case is found in the iron and steel industry, where it can be argued that the present changes are partly in response to changed technical conditions of a generation ago.

In these circumstances, it seems that the actual and optimum patterns of location will not coincide in the absence of intervention. We can now turn to the second question of whether control would involve a greater or less degree of divergence. On general grounds, there is a case for concluding that divergence would be lessened. Each of the factors which have been indicated as causing divergence in present conditions might have its scope reduced. The degree to which personal caprice is operative might not be so great, and those decisions which are now made on arbitrary grounds might be made with closer consideration of the cost issues involved. It is not certain however, that the subjection of location to the play of various political motives, and the making of decisions on the basis of a different type of criterion, would necessarily result in less divergence than accompanies decisions taken on the basis of considerations of more personal interests. In this connection it seems impossible to arrive at a definite conclusion *in abstracto*. There is a possibility of the removal of elements of arbitrariness, but there is also room for the entry of a new type of factor.

It can perhaps be allowed that knowledge would be less imperfect. This is a well-known point in connection with any scheme of control, and it has some validity here. Not only could there be the more careful consideration of the factors involved, but also, and more important, forecasting could be more accurate in that there would be control over some of the elements which lead to the future being uncertain. This point in favour of control assumes that it is possible to project, and to accomplish, a fairly long period plan for location.

There would also be less divergence between private and social costs, as the latter could be taken into account in fuller measure than is the case at present. Finally, as some of the elements of change would be under control, the divergence due to the lag of the actual behind the optimum pattern of location would be diminished. This might, of course, involve a diminution in the rate of technical progress and of industrial development ; perhaps the lag should be diminished by speeding up the process of change rather than by attempting to crystallise existing conditions. On the whole, however, and subject to the

proviso that the matter does not become a question of political expediency, there seem to be no grounds for assuming that control would increase the divergence ; the balance is rather in the other direction.

This conclusion relates to the question of the general effects of control, but it is further necessary to consider the effects of control exerted in a particular direction, namely, in the diversion of development towards the depressed areas. There are two principal considerations which suggest that this need not involve any enduring divergence. The first is the possibility that the present optimum involves a greater degree of industrial development in the areas than has in fact occurred, that the "drift to the South" has involved certain costs which would not have been incurred if the movement had been less marked. Here there are immediately obvious those elements of social cost which have already been mentioned—the costs of transferring workers, of duplicating social capital, and so on. Further, however, it is probable that the post-war changes in location have been due to certain elements other than considerations of cost ; there is some force in the contention that some of the change has resulted from the attitude of the entrepreneur to the depressed areas. Caution is needed here, as the desire to establish a plant in a prosperous area, and not in one which is depressed, has often a rational basis, but it is still true that factors such as the belief in the importance of local rates in costs (their importance is really negligible), or dislike of Trade Unions (or of a Trade Union "atmosphere") have played some part in preventing development in areas which are just as suitable as, perhaps more suitable than, those areas which have developed rapidly. The experience of those entrepreneurs who have established plants in the depressed areas suggests that the scales have been too heavily weighted against the areas. It must also be noted that, although the depressed areas do not possess the diverse industrial structure which leads to new development, this does not necessarily mean that they are unsuitable areas for the expanding industries. They lack the means of initial creation, but in some parts they possess the conditions necessary for growth and development. Again,

appeal must be made to experience, in the form of the successful growth of those industries which have been established, while it should be noted that the first results of the policy of inducements recommended by the first Commissioner for the Special Areas in England and Wales, and adopted by Government in the Special Areas (Amendment) Act of 1937, suggest that, in some directions at least, the obstacles to development in the areas are not so very great that a comparatively small bait to the industrialist will not overcome them.

The second consideration relates to the changing relative importance of the various factors which influence location. It is not possible to analyse this element in detail here ; it must be sufficient to note that, in general, the grouping of the factors which determines the location of the expanding industries is different from that which decided the situation of the declining industries. There are, of course, exceptions in individual industries, but over the whole field there has been a decline in the importance of factors such as the situation of certain basic raw materials, of transport costs of materials, of labour supplies specialised to skilled trades. The factor of growing importance is the distribution of population (and therefore of markets) and of existing industries (because of need for close technical contacts, for some concentration of processes, etc.). These changes partly explain the general changes in location which have occurred, there having been a re-orientation of industry from areas which had advantages in respect of the factors important in the declining industries to areas which have the advantages in the factors influencing the expanding industries. The relevance of this to the present discussion is that it implies a greater freedom of control. When the dominant factors are of a "technical" character (e.g. the situation of raw materials) the best locations are narrowly determined, and deviation from these would involve considerable cost. When, however, the "non-technical" factors are important this is not the case, as the very fact of industrial development creates the locational conditions for further development. Thus control which diverted industries to areas which were initially not the best might involve some cost, but this would not necessariiy persist,

as the areas would become suitable for other industries and development would be cumulative. This applies, of course, to any area chosen for development ; it is simply that location is becoming less determined by natural conditions and more by an existing pattern.

To conclude that control in favour of the depressed areas need not involve considerable immediate cost, and that any cost which was involved would not persist, is not, however, a final answer to the question whether it is an entirely appropriate policy. There are other matters which must be taken into account ; some of these can be briefly indicated. It has already been suggested that the policy would have to be one which was carefully formulated, and based on adequate knowledge of the factors involved ; a policy of empirical expediency is but a poor substitute, with many disadvantages, and perhaps none of the advantages indicated. There are also many practical difficulties involved in the details of control. It would, for instance, have to be decided over what field control could be exercised. It has been shown that not all industrial development could be re-orientated, and there would immediately arise the difficulty of deciding upon criteria to be applied. Further, if the State were to compel firms to situate their plants in particular areas, it might have to undertake responsibility for the results (or supposed results) of its actions. As most firms would regard as unsuitable every location other than that which they themselves preferred, this difficulty would be extensive ; certainly the depressed areas would provide a plentiful crop of unsuitable locations. Either control would have to have some elasticity, in which case a great deal of its effectiveness would be lost, or it would have to be more rigid, in which case its consequences might be undesirable.[1]

Again, there would be some difficulties involved in having this one element subjected to control while others remained free. The most obvious example is the case of movements of labour ; control of location seems to imply some degree of interference in the placing of labour. There is, in fact, the same type of

[1] In some industries (*e.g.* iron and steel) this would be a serious matter.

conflict as must appear in every case of an attempt to "plan" one element in a system while leaving others uncontrolled.

Finally, the application of control of location to the problems of the depressed areas is the application of a long period solution to an immediate problem. It is true, of course, that control might avoid the emergence of other depressed areas in the future ; the problem is more than immediate in that it is one which seems as though it must accompany all industrial change. This result would, however, demand a degree of comprehensiveness and exactness in control which would be extremely improbable. Control involves a re-orientation of industrial development of fundamental importance for the future as well as for the present ; it is not merely the simple remedy for an immediate problem which it is sometimes imagined to be. Perhaps some experiments might be made on lines suggested by Sir Malcolm Stewart, when he was Commissioner for the Special Areas, such as the limiting of further development round London, but a complete policy of control needs comprehensive knowledge and the ability to formulate an ordered scheme of development, both of which are lacking. As yet the issues are not sufficiently clearly defined to warrant either its summary application or its final rejection.

S. R. Dennison

Mr. Clark's "National Income and Outlay"[1]

More than one reviewer would be required to do justice to Mr. Clark's new book. This review is restricted merely to a discussion of some of the statistical problems raised by Mr. Clark's work and does not consider the important economic conclusions to be drawn from his results. Professor Kuznets has aptly remarked that the preparation of estimates of national income is the task for a man who is an economic philosopher, an expert statistician and an amateur accountant. Mr. Clark combines these rôles admirably and, without saying more, your reviewer would at the outset like to join with others in congratulating Mr. Clark in the publication of one of the most important books of recent years.

Mr. Clark's *National Income and Outlay* is a revised edition of his previous book on *The National Income* 1924-31 brought up to date and extended to include additional chapters on the expenditure of the national income, the accumulation of capital, an analysis of trade cycle movements between 1929 and 1936 and concluding with a final chapter on the rate of economic progress. The detailed revisions which Mr. Clark has made are fairly considerable but these were to be expected in view of the criticisms made of his previous work but more especially in view of the new information which has been officially published since 1932 relating to population, production and retail sales. Mr. Clark has issued, during the last four years, three different estimates of the national income in 1931 and 1932 but he surprises us now by adopting a new definition of national income which has the effect of raising the estimates made in his previous book by about 10 per cent. He argues (pp. 11-12) that "all receipts by the Government from Customs, Excise and other indirect taxes and also the receipts of local authorities from rates and similar indirect taxes" should be counted as part of the national income. His reason is that such indirect taxation affects the prices of the articles or services taxed and

[1] *National Income and Outlay*. Colin Clark. Macmillan, XIX + 304. 12s. 6d.

the income of the Government should be included in the same way as the profits of a private company operating a monopoly. Mr. Clark, however, overlooks the fact that the greater part of such receipts by the Government from indirect taxation are paid out in wages, salaries, or interest payments to individuals and since these will already have been included as personal incomes in his estimates, it seems Mr. Clark has counted them twice. Mr. Clark recognises (p. 12) the apparent paradoxical position into which his definition leads him that by increasing indirect taxation the Government increases the national income. This later lands him in difficulties (p. 139) when he measures the incidence of taxation by comparing the amount collected in taxation as a proportion of the national income (which according to his definition already includes indirect taxation).

Mr. Clark starts his book by analysing the population of the country according to income receivers and immediately startles his readers by stating that "contrary to general impression, the increasing number of women in paid work has not been at the expense of women working in their own homes." In proof of this, he shows in Table 3 that the percentage of occupied women to the total female population aged 16-64 was 36.9 in 1911, 35.5 in 1921 and 36.5 in 1931. The difference between 1911 and 1931 which is, in any case, not very great is probably wholly explained by the changed age distribution of the female population between 16 and 64. Indeed the proportion of women in paid work in each of the census age groups up to 45 in England and Wales increased between 1911 and 1931. How these proportions are likely to change in the future is so speculative a problem that Mr. Clark does not venture to make any estimates and he contents himself merely by calculating the expected changes in the number of occupied males between 1935 and 2015. He is able to show that the decline in occupied males will occur much later in the present century than the decline in the total male population. It should be noted that these estimates are based on the proportions of occupied to total males at each age group according to the 1931 Census. The expressions "at work" (Table p.20) "occupied" (Table 5) and "available for employment" (Table 15), though

they infer differences, appear to be used as equivalents to the Census definition of "occupied."

In Chapter III estimates are given of the income of corporate bodies, except the Government, and of individuals with incomes above the income tax limit. They are based mainly on the Inland Revenue returns which have become more comprehensive with the lowering of the exemption limit. Following his previous practice, Mr. Clark has included the rental values of all house property even if occupied by their owners and he has made allowances for trading losses and for the writing down of inventories due to changes in prices. The justification for these allowances has been debated elsewhere (*Journal of the Royal Statistical Society*, 1934) and all that need be said here is that it may be argued that trading losses may be taken in part as changes in capital values and not of income, and further that the correct allowance for writing down of inventories depends not only on changes in prices but on assumptions as to the rate of stock turnover. The main resulting table of this chapter is given on page 60. Mr. Clark is right in interpolating there the Schedule A assessments between the re-assessment years but it is suggested that more accurate results might have been obtained by interpolating on the gross rather than the net assessments, taking account of the rise in "other reductions and discharges" due to appeals which usually accompany re-assessments of Schedule A values. The whole question of estimating the true gross and net values of land and property is extremely complicated by income tax practice. For example, the Schedule A totals are affected by the agreement between the Building Societies and the Inland Revenue and the figures given in Table 23 are not comparable for this and other reasons. While Mr. Clark is right in not accepting the published Inland Revenue figures for Schedules A and B, he would also have been right in revising the published Schedules C and D figures. He seems to assume in Table 23 that all income, instead of only part of the income from British and Foreign securities accruing to charitable organisations is assessed for income tax. He rightly excludes here income from British and Foreign Government securities held by Government Departments in respect of

Insurance and Pensions Funds but he apparently omits to include them later (p. 82) when considering Government income.

Mr. Clark comes back again to the interpretation of the Inland Revenue returns when he considers the difference between gross and net national income as being the allowance for the maintenance repair, depreciation and obsolescence of capital goods. He has to decide whether the Inland Revenue allowances for repairs and for wear and tear are on the average adequate, and further, whether these allowances granted in any one year are equal to the allowances which should be properly attributable for maintenance and depreciation. Mr. Clark admits this second question is at present unanswerable. It is in fact necessary to assume—this assumption is extremely important later when he considers savings and investment—that the conventional scale of Inland Revenue allowances is adequate. He attempts to check this for buildings in 1930 and estimates a difference of only £8 million between Schedule A allowances and the cost of repairs and maintenance work to buildings and similar property as shown by the 1930 Census of Production. Such a check for a single year can, however, only be approximate, since in addition to the assumptions it is necessary to make, the bases of valuation may be somewhat different and it is almost impossible to estimate even approximately the amount of repair and maintenance work actually done by individuals and firms themselves to their own property. Individuals and firms have of course the right to claim for extra allowances for repairs and maintenance if they can satisfy the Inland Revenue that the existing allowances are in their own cases inadequate. Otherwise they are allowed the conventional scale of allowances varying with the annual value of the property. It is an open question whether if Mr. Clark was right in interpolating the Schedule A assessments between re-assessment years, he ought here also to raise the allowances for repair and maintenance in proportion.

Mr. Clark thus arrives on pages 88-90 at his estimates of national income for 1924 to 1935. His revised estimates of net national income are £4,035 million for 1924 and £4,384 million in 1929, falling to £3,844 million in 1932 and provisionally put

at £4,530 million in 1935. If receipts from local rates and from indirect taxation are excluded, these estimates would be reduced in each year by about £400 million and in 1935 by an even higher amount.

He next proceeds to analyse these figures for changes in the distribution of income, first as between wages, salaries, rents, and profits and interest, and then as between persons. This section of the book shows considerable revision compared with Mr. Clark's previous work. Thus, he shows the proportion of wages to total income rose from 39.5 per cent. in 1911 to 42.1 per cent. in 1924 and 42.0 per cent. in 1933 and he notes (p.96) "the slight permanent rise in the proportion of national income taken by wages." He thus seems to rebut the statement made in his *National Income* (p.72) as to "the declining tendency of the share going to wages." The most striking fact which Mr. Clark brings out is the rise in the shares of national income accounted for by salaries. Comparing 1911 and 1929, "10.5 per cent. of the national income has been lost to "profits," of which 7.7 per cent. has been taken by higher salaries and the remainder by wages and lower salaries." It still remains something of a mystery how this increase in salaries has occurred, whether it is due to the decline in the number of persons working on their own account, the growth of the class of salaried managers the "professionalisation" of the working class, or merely a change in nomenclature from "wage-earners" to "salaried operatives," It may be noted that the most marked change in this direction occurred between 1911 and 1924 and the tendency for the growth of the salaried class appears from Mr. Clark's figures to have been slower between 1924 and 1935. Indeed, the share of the national income taken by salaries apparently declined between 1929 and 1935.

Figures of the personal distribution of income are given for 1929 and 1932. The inequality of the distribution appears to have been less in 1932 than in 1929 but this cannot be taken as part of a general tendency towards a more equal distribution for Mr. Clark expresses the opinion (p.110) that the inequality of distribution of income was greater in 1935 than in 1929 and also therefore than in 1932. It should be noted here that Mr. Clark

is considering only gross and not net personal incomes, that is, before deduction of highly graduated income taxes and of expenses involved in earning incomes. He makes excellent use of social insurance statistics to estimate the number of persons with annual incomes less than £250, which helps him in interpolating the distribution of incomes between £162 and £2,000 in 1929 and £125 and £2,000 in 1932. The absolute totals given in Table 47 should not be taken as exact owing to evasion. Sir Josiah Stamp has recently suggested that evasion may be appreciable in the case of sur-tax payers (*Journal of the Royal Statistical Society*, 1936) and Mr. Clark has been forced to assume that the relative amount of evasion is the same along the distribution of income curve.

Chapter V concludes with an analysis of costs and profits of British industries in 1930, 1933 and 1934. For this purpose it is assumed that male salary earners, including employers, get £270 a year and female salary earners £125 a year. "These results are based on general averages and the results may be wrong in industries employing particularly highly paid or particularly lowly paid grades of salary-workers." A general average of 6.7 per cent. of net output is taken for each industry as "covering depreciation, local rates, advertising, postal, travel and other office expenses." No evidence is given in support of this assumption for 1930 or that it was equally valid for 1933 or 1934. The "rent, profit and interest" for each industry is then estimated by deducting wages, employers' contributions to insurance and the assumed salaries and other expenses from net output. In Tables 56 and 57 these profits are then calculated as percentages of the gross output of each industry as recorded in the Census of Production and the Import Duties Enquiries. Since these gross output figures, for example, of textiles may be subject to duplication since the finished products of one firm or group of firms may form the materials used by other firms and the extent of duplication is not the same for all industries, the profit ratios on turnover shown in Tables 56 and 57 may give a misleading impression of the rate of profit in each industry.

It has been noticed above that Mr. Clark's figures of the distribution of incomes related to gross personal incomes before deduction of taxation. As he states (p.142) it is impossible to specify the amount of direct and indirect taxation falling on persons in each income level. He has, however, attempted to measure for 1913, 1925 and 1935 the differences between the amount collected in taxation from the working class and from the "well to do" and the amount expended in public services on their behalf. He estimates that the working classes contributed in 1935 79 per cent. of the cost of those services designed directly to benefit them. It should be noted, however, that this proportion would have been lower if he had taken a year such as 1932 or 1933 when the amounts paid out in unemployment benefits were higher than in 1935. In making this estimate he assumes all direct taxation (income taxes and death duties) to be borne by the well to do and he adapts for his use the Colwyn Committee's figures of the burden of indirect taxation. Duties on beer, wines and spirits constitute the main item in indirect taxation on the working class families and their incidence is calculated on the hypothesis that 15 per cent. of the males and 30-40 per cent. of the females are practical abstainers. The Colwyn Committee's estimates have been subject to some criticism (D. C. Jones, *Journal of the Royal Statistical Society*, 1927) and even Mr. Clark is safe in using them, the dispersion of the incidence of indirect taxation between working class families may be considerable. Mr. Clark makes a list of those services provided by public expenditure which he considers directly benefit the working class. This list must be more or less arbitrary. It includes, for example, the total expenditure on education, the advantages of which Mr. Caradog Jones (*op.cit.p.*710) considered in his analysis as not confined to the children of wage-earners. The only two services Mr. Clark reckons as mainly benefiting the well to do are the expenditure on highways and the payment of national-debt interest. It is debatable to what extent the cost of repairing and making roads is to the exclusive advantage of the well to do, but Mr. Clark is surely in error in taking the whole of national debt interest as directly benefiting them. At least some deduction ought to be

made for interest paid to foreigners, interest on saving certificates and dividends on gilt edged securities held by Government Departments in respect of social insurance funds. Professor N. F. Hall has recently estimated that one-sixth of internal National Debt Securities are held by the Bank of England and Government Departments (*Transactions of the Manchester Statistical Society*, 1936-37).

The "well to do" according to Mr. Clark's definition (p.142) are persons with incomes more than £250 a year ; persons with less than £250 are "the working classes." He does not, however, retain this distinction when considering changes in savings and investment later (pp.189-193). He prefers to talk about the private saving of "the rich" and he reaches the remarkable conclusions that "large private incomes have ceased to count as a source of saving" and "in fact, private individuals are probably still on balance spending from their capital." These conclusions are not based on any actual evidence of the savings of rich people but are inferred from the theoretical axiom that savings must equal investment and from the fact that the undistributed profits of companies, the obligatory savings funds of local authorities and the savings of the working and middle classes are greater than investment as calculated and the discrepancy must therefore be explained by the rich spending from their capital. For all the years 1928 to 1935 savings were greater than investment and it may be noted the differences between the two might have been even larger if Mr. Clark had included under savings changes in deposits and allowances on personal accounts with ordinary commercial banks and had not reckoned as "investment" the trading losses of companies. A possible explanation of the differences may be found in the definition of investment as taken by Mr. Clark but the conclusion is so contrary to what might have been expected that this part of Mr. Clark's book demands the most careful scrutiny.[1]

In support of his conclusions, Mr. Clark quotes from the article by Mr. Feavearyear (*Economic Journal*, June, 1936) in

[1] Since this review was written, this section of Mr. Clark's work has been discussed more fully by Miss M. Curtis (*Quarterly Journal of Economics*, August, 1937).

which the author estimated a decline of private capital between 1929 and 1933. The methods used by Mr. Feavearyear were, however, in the opinion of your reviewer faulty. Mr. Feavearyear assumed that the general estate multiplier which fell between 1924 and 1929 would continue to fall from 1930 to 1933 or would, at least, remain the same as in 1929. The downward trend in the estate multiplier between 1924 and 1929 may, however, have been wholly or mainly due to the fact that the values of the kinds of property held by persons with large amounts of capital such as stocks or shares—usually older people—rose more than the values of the kinds of property held by persons with small amounts of capital such as gilt edged securities and house property—usually younger people—during the upward movement of the trade cycle 1924-29. Moreover, the weighting of Mr. Feavearyear's correcting factor for changes in values between 1929 and 1933 is based on the distribution of property in the estate duty returns. Those who die in a particular year are mainly older people and it cannot be assumed that the distribution of property held more especially by older people represented by the estate duty returns is the same for people of all ages.

Mr. Clark returns once more to the financial problems of "the rich" in Chapter XII but "the rich" is here synonymous with the definition of the "well-to-do" in Chapter VI, namely, persons with incomes more than £250 a year. (Cf. pp.142 and 251). According to Table 112 "the rich" had a total income from 1924 to 1928 in excess of their expenditure of about £100 million a year. Since 1929 their expenditure has been greater than their spendable income. The detailed basis of Table 112 is difficult to check but it would seem that the sharp drop in the income of the rich in 1930 was due to the deduction of £251 million written off inventories. If this deduction was not made, the lag between change in the income and the change in the expenditure of the rich after 1929 would be reduced. It should be noted also that Mr. Clark deducts from income about £80 million a year as payments for death duties. Since these duties are only paid by 3-4 per cent. of the adult population each year, on the assumption that an estate passes at death once every 25

or 30 years, this may be another reason why too close a comparison cannot be made between the absolute amount of the income and the expenditure of the rich.

Enough has been said to indicate the wide range of topics of economic and statistical interest covered by Mr. Clark's book. No one after reading it is likely to deny its importance. It is the only book at present available dealing with the national income of this country in all its aspects. Indeed it is the importance of the book which makes it to be regretted that insufficient warnings are given to the general reader as to which are merely informed guesses and which are trustworthy estimates. Mr. Clark states in the Introduction that the figures for years after 1931 "remain liable to small amendment," but he generally presents all estimates irrespective of their range of error with the same appearance of finality. He rightly or wrongly inclines to the view that an estimate is better than no estimate at all and he is ever ready himself to draw the broad generalisation from incomplete material. The result is a book which is always interesting, is remarkable in its boldness and is in parts highly controversial.

H. Campion

Reviews

Economic Planning and International Order. By Lionel Robbins. (Macmillan. 8s. 6d. net.)

If the inhabitants of this world manage to persist and struggle through to an age of reason they will surely regard Professor Robbins as a prophet of that age. If they go down in chaos, and a few rational beings are left to begin the task of rebuilding, he will surely again be regarded as a prophet who foresaw, and who pointed out the way of escape. To deny Professor Robbins' teaching is to accept the fact of irrationality, and the justification of contrary teaching must be that it is an attempt, in the midst of this irrationality, so far to obviate the effects of irrationality as to allow of a precarious continuity. In its latest phase this latter teaching seeks to meet the demand for the "planning" of both the internal and the external economic relations of the nations of the world, and the outcome is seen in the policies now being pursued and in the schemes operated. In this volume, with rationality as his criterion, Professor Robbins brings these policies and schemes under examination.

To say that the examination is conducted with rationality as the criterion is merely to say that Professor Robbins continually asks the simple question whether under the prevalent monopolies, tariffs, quotas, exchange controls, and other present and prospective forms of economic restrictions, the productive resources of the world are being, and will be, used in the most efficient way, and whether human demands are being, and will be, met as adequately as they might be. It will be noted that Professor Robbins is international in his outlook ; in accord with rationality he regards the nations as members of one economic community. From this point of view, he first discusses independent national planning in its various forms ranging from tariffs to complete national socialism ; next, he proceeds to partial international planning and discusses international trade agreements, control of production, regulation of wages and hours of labour ; and third, he considers complete

international planning which involves a discussion of international communism and international liberalism, with a supplementary discussion of the problem of international money. Throughout these discussions, and again in accord with rationality, his conclusions are emphatically on the side of economic liberalism with its necessary accompaniment of political liberalism. Only in the practice of economic and political liberalism does Professor Robbins see much hope for the future and in this conclusion those who are bold enough to proclaim their faith in rationality will surely agree with him.

To attempt in a brief notice to give any adequate indication of the masterly arguments, the power of analysis, and the relentless logic with which Professor Robbins builds up his case is impossible and, indeed, even in a larger notice, would be inadvisable, for this is a volume which ought to be read and its contents digested by everyone who has the slightest interest in the present and the future state of the world. That its teaching will be discounted by assertions that it seeks to revindicate a policy of *laisser-faire* goes without saying, but such assertions alone will not serve as an answer. An adequate answer must formulate an alternative which will meet the demands of rationality, not only at the moment, but as far as one can gaze into the future, and most certainly no such alternative has yet been formulated. The "planner" of to-day was known under another name yesterday, and will be known under a different name to-morrow. Meanwhile, the creative forces innate in individual human beings whose operation cannot be confined within the limits of any "plan"—such plan being almost invariably the result of the pressure of sectional interests—continue to operate within the limits of a general "order." An acceptance of a policy of *laisser-faire*—to the extent that this policy is advocated in this volume—implies a recognition of the existence of this order and, within the order, of the continuous operation of the innate creative forces. As Professor Robbins and those who think like him see the situation, the peril of non-recognition is, at best, an economic and social system which does not meet the demands of rationality and, at worst, a conflict of which the inevitable outcome will be chaos. In recent

years Professor Robbins has gained a well-merited reputation for fearless advocacy of measures which, in these present days, the nations of the world are reluctant to accept, and this volume will enhance that reputation. One's earnest hope is that this advocacy will speedily yield its intended result.

G. W. Daniels

Industrial Reconstruction and the Control of Competition. By Arthur F. Lucas. (Longmans. 15s. net.)

In 1890, in his Presidential Address to the Economics Section of the British Association, Marshall discussed the possibility of the future growth of monopolies and concluded that it was "a matter of pressing urgency that public opinion should accustom itself to deal with such questions, and be prepared to throw its weight against such compacts as are injurious to the public weal, that is, against such compacts as are likely to inflict on the public a real loss much greater than the gain to that trade." In spite of a considerable growth of such "compacts" as Marshall discussed, there has been little attention paid to this basic question, or to few other of the more fundamental issues involved. Professor Lucas now makes the attempt to assess the movement in Britain during the last decade.

The book falls into three parts ; of the first, which describes the "setting," little need be said, in that it will all be fairly familiar to British readers. Although there is some tendency to over-statement and some signs of a too ready acceptance of control as an "idealistic" movement of "industrial self-government," this part gives an adequate background to the problems to be discussed.

The second part gives, in seven chapters, concise and readable accounts of various control schemes, in the coal-mining, iron and steel, shipbuilding, flour milling, cotton, chemical, and other industries. There is a useful chapter on various Trade Associations, and one on the Agricultural Marketing

Schemes. Professor Lucas has been exhaustive in his use of the sources of information, and has explored a wide range of material. Perhaps his use of this is at times somewhat indiscriminate. It is possible to find inconsistent statements from different sources impartially recorded, with no indication of which is considered to be the more accurate, while the treatment of each industry tends to be coloured by a particular view-point. There is, however, certainly no other source which presents so complete a survey based on so much material.

It is in the third part that there is most of value. Here the author turns to the basic issues of control. The question of the determination of prices is analysed in the light of the experience of the schemes described. Professor Lucas concludes that "there are so few cases of obviously unreasonable prices that control can, by and large, be freed from the accusation of pursuing an extortionate policy." It is, however, a difficult matter to define what are "reasonable" prices. The author is aware of this, and shows clearly the nature of the difficulties which must confront schemes of control in deciding upon a criterion. In practice the matter is one of a rough trial and error, and in the process the "public interest receives very little consideration."

There are similar doubts with respect to the measures used to regulate output. Professor Lucas again shows the operation of rule-of-thumb methods, usually based on the output of a previous period. The final result is well summarised in the author's judgment on the operations of the Tin Restriction Scheme—"If these restrictions be viewed merely as means of raising prices, they may be adjudged eminently successful, but as measures for the careful adjustment of output to the market their utility is open to serious question."

The question of restriction of output leads to discussion of how far control maintains efficiency. Here it is shown that few of the control schemes have had any tangible results in the field of re-organisation. There is doubt thrown upon the ability of combines to achieve all the advantages of large-scale, while the other types of organisation are shown to be not very effective instruments for the increasing of efficiency, either in

the concerns generally or by the liquidation of the moribund and least efficient firms; "as a permanent solution to the problem of maintaining industrial efficiency when competitive forces have been suspended," control "is a very dubious policy."

Finally, the safeguards for the public from the effects of monopoly are examined. Economic safeguards are weak, while the special measures established by law in connection with certain of the schemes are of little effect. A clear analysis of the position in common law leads to the conclusion that here again the public has little protection.

There is no final assessment of the effects of control as a whole, and Marshall's fundamental question thus remains unanswered. But some of the matters which bear upon it are elucidated, and Professor Lucas is to be congratulated on posing it once more, and in a realistic setting which economists in this country have explored but little.

S. R. Dennison

Umrisse einer Geschichte der Preise und Loehne in Deutschland. Volume I. By M. I. Elsas.

(A. W. Sijthoff's Uitgeversmaatschappij N. V. Leiden, 1936 fl. 12.50)

In 1930, at the suggestion of Sir William Beveridge and Professor Edwin F. Gay and with the financial assistance of the Rockefeller Foundation, an International Scientific Committee on Price History was formed. Its task is to collect and to publish, on an international basis, the authentic material necessary for the study of secular trends in the fluctuations of prices and wages and of the purchasing power of money. In this comprehensive volume, Dr. Elsas, the German member on the Committee who is well known to the readers of the London and Cambridge Service as a distinguished statistician, submits the first results of many years' investigation of the original sources. His primary material deals with prices and wages in three commercial centres of South-Germany (Munich, Augsburg and

Wurzburg), and covers the period from the end of the middle ages, practically from 1400, up to the beginning of the 19th century.

The particular importance of this exemplary statistical inquiry lies in the fact that its data are not picked out from discontinuous sources as is the case with most of our statistical information about past centuries, but are mainly based on the homogenuous statements of accounts of municipal administrations and hospices. Even these sources are still inconsistent enough to present the researcher with a host of methodological problems of which Dr. Elsas gives a very instructive description. Nevertheless more than 200 series of prices, half of them extending over a period of more than 250 years, and about 25 series of wages and salaries of a similar range, permit a unique comparative analysis the results of which are of extraordinary interest both to the economic historian and to the student of economic fluctuations.

Dr. Elsas deserves special appreciation for having made these results accessible to the non-specialist in an introductory chapter which deals with such questions as the general trend and the relative movements of prices and wages over the period investigated, the influence of wars on price fluctuations, the connections between prices and wages on the one hand, and the movement of population on the other hand. Only a few of his conclusions, which no doubt will provoke further discussion, can be mentioned here.

The existence of a rising general trend and of a "long wave" in the price movements of South Germany between 1400 and 1800 seems to be fairly well established. Most marked with foodstuffs, particularly with corn, we find for most prices an upswing until the beginning of the 17th century followed by a downswing which ends about 1670 and turns again into an upward movement reaching right up to the 19th century. Both trend and fluctuations are largely accentuated by the debasement policy of the monetary authorities, particularly during the "clipping period" of the 17th century. But the general structure of the movement remains the same even when the prices of the time are reduced to a stable monetary unit. The

downswing is clearly connected with the Thirty Years' War though correction for monetary depreciation rather shifts the turn of the price movement to the end of the war. This coincidence between wars and high prices of foodstuffs is, incidentally, less marked in the minor fluctuations which are obviously dominated by the variations of the local crops.

Dr. Elsas finds a high correlation between the long waves of the prices and the movement of the population in the towns concerned. For the upswing he interprets this correlation as a symptom of the rising costs of production under the pressure of an increasing demand for foodstuffs. It is true that the population of both Munich and Wurzburg rose by about 100% during the 16th century. But the conclusion would be fully convincing only if the population of the country as a whole had shown a large increase during the critical period. Estimates of the German population indicate, however, that the general increase was hardly bigger than 15% for the whole century so that the extraordinary growth of the towns represents a redistribution through migration rather than an absolute rise of the population of larger districts.

On the other hand, the increase in corn prices during the 16th century is so tremendous that it greatly surpasses the rise of nominal wages. There can be no doubt that real wages in terms of food prices, and even of the prices of industrial commodities, fell very considerably for more than 100 years. This reduction of the real purchasing power of the masses during the period of the Reformation for which Dr. Elsas gives unquestionable statistical proof casts new light on an important problem of German economic history : the dating of the decline of the town economy. Leading authorities of the Historical School fixed the epoch of change for the end of the 16th century, connecting it with a series of events in foreign policy which led up to the Thirty Years' War. But Dr. Elsas' investigations rather confirm the opposing view that, in spite of the prosperity of a few commercial centres, South Germany shows marked signs of social and economic decay from the end of the 15th century. This should probably be traced back to the growth of innumerable territorial sovereignties which finally broke up the political

unity of the Empire, and to the rural transformation, the victims of which violently reacted in the upheavals of the Peasants' Wars and supplied the major part of the increase in the town population.

The vast quantitative evidence which Dr. Elsas has dug out from the archives can, however, be utilized to the full only if it is subjected to a comparative study of the annual changes. When read together with the 400 pages of explanatory notes on the individual statistical series, these plain figures disclose a most vivid picture of the daily economic life of past centuries. The author and the authorities who enabled him to continue his work when another of these German social upheavals had shut him off from his original sources, will find themselves richly recompensed for their unusual efforts by the resonance and active interest which the result of this and the following volumes is certain to arouse.

A. Löwe

The Westminster Bank Through a Century. By T. E. Gregory. (Westminster Bank Limited, London.)

Whenever a public institution celebrates its centenary by publishing a record of its history a great opportunity is presented of making a valuable contribution to knowledge. Unfortunately, however, although the record may appear, the opportunity is usually lost and, except for those closely associated with the institution, the record is soon consigned to oblivion. That this will not be the fate of these centenary volumes of the Westminster Bank may be stated with the utmost confidence. The central theme of the volumes is, of course, the origin and growth of the London and Westminster Bank and of other of the Banks which ultimately came to form the Westminster Bank as we now know it, but, in working out this theme, Professor Gregory has produced what everyone will recognise as a large and scholarly contribution to a comprehensive history of joint-stock banking in this country.

Between the history of banking and that of the wider economic organisation there must, of necessity, be a close relationship and in Professor Gregory's treatment of his subject this relationship is never left out of sight. If the changes in the wider economic organisation during the last century and a half are seen in outline as a development from small private enterprise to joint-stock enterprise and onward to large-scale amalgamations, then the centenary history of the Westminster Bank becomes a "close-up" view of this development. For illustration the reader may be invited to study the genealogical tree, given towards the end of Vol. II, where he will find the names of many banks which date from the eighteenth century, one, indeed, from 1685. That the existence of numbers of these early banks was of short duration is well known, but that so many as are here recorded—and numerous others are recorded elsewhere—lived on, ultimately to merge their individualities in larger unities, and in that sense still persist, is a fact of fundamental importance for those who would learn how social and economic progress can be combined with stability. The method of progress here illustrated is not confined to the development of banking in this country, nor to the last century and a half : it may be discovered in widespread operation in the earlier centuries of our history.

Here, however, one must hasten to add that the change from the private system of banking to the joint-stock system was not everywhere welcomed with open arms. As is usual in this country there was opposition to change, but, again as is usual, this opposition was susceptible to the pressure of progressive forces and eventually it gave way. The general reason for the change was that the private system was unable to provide either adequate resources or adequate security for an expanding economy which, at the same time, was being knit into a closer unity. This reason now seems convincing, but it was not readily accepted as such either by the private bankers or by the Bank of England, extremely jealous of its privileges. The larger part of the first volume of this history is concerned with the situation thus created, with the difficulties against

which the London and Westminster Bank had to contend, and with a detailed account of how in course of time the difficulties were surmounted or, better perhaps, faded away.

If one had to choose the chapters in which Professor Gregory has made his most distinctive contribution to our banking history the chapters included in the first part of his volumes would have powerful claim to the choice. The remainder of the first volume traces the later progress of the London and Westminster Bank and the history of the London and County Bank to the point of the fusion which led to the word "County" being added to the title of the former Bank. Similarly, in the first part of the second volume, the history of Parr's Bank is traced, and an account given of the circumstances of the further fusion which resulted in "Parr's" coming into the above title, and in the title becoming familiar to the peoples of Lancashire, the Midlands, and the West of England. Surely, the claims of economy must have influenced the later adoption of the present title.

This brief notice of these important historical volumes cannot close without mention of the inclusion of some half-dozen critical biographical sketches of men (*e.g.* Walter Bagehot) who have occupied prominent positions in one or other of the constituent institutions of the present Westminster Bank, and whose names have become famous in banking history. In these sketches Professor Gregory is seen at his best, writing with all that keeness of mind for which he is noted.

Perhaps it is unnecessary to say that the volumes are handsomely produced, the numerous plates being a delight to the eye. But, to appreciate the plates fully, one ought to see the *edition-de-luxe*.

G. W. Daniels

The Limits of Economics. By Oskar Morgenstern.
(Hodge. 7s. 6d.)

The subject matter of this work is the relationship between economics and economic policy or the position of economic theory in the broad field of politico-economics. The author puts forward the contention, which he denies abundantly and valuably within these pages, that economics is a barren exercise unless it is of help in the fashioning of policy ; for if economics does no more than place danger lights before the pitfalls of intervention so well described, it has performed a most useful function.

The simple thesis is that economic theory should be used to trace the effects of given measures of intervention, both those avowed and those discreetly hidden, and ensure so far as possible that all consequences are considered before action is taken or rejected : that economic theory should be used to investigate the consistency of the consequences of the different measures proposed, and as a bar before which can be judged the claims made for measures of intervention that are sponsored by different interests. As Professor Morgenstern says, "these are rôles suited to a science, unlike that of indicating ends."

On this theme, the author has a number of pertinent things to say ; that intervention should be carefully scrutinised, for it is urged by special interests and the obvious effects are generally pleasant ; that economics theory is hampered in the performance of its true functions by the popularity of amateur economists, and that the "debunking of economic catch words" is very much needed ; that too much help should not be expected from economics, because of the lacunae that exist in theory and because of the ineradicable difficulty of tracing effects to their causes in a changing world. So long as facts are difficult to come by, a complete appraisal of a situation is difficult or impossible, and so long as theory runs haltingly in the wake of the system it explains, the limits of economics are narrower than we could hope.

This is, perhaps, not a very profound book and it does not say anything very novel, but it is a salutory book which would, unfortunately, be more valuable if it were addressed to a body of opinion other than one which is, we hope, already more than half converted or convinced.

J. STAFFORD

Economic Thought and Language. By L. M. FRASER. (A. and C. Black. 12s. 6d. net.)

This volume contains a lot of reading, much of it difficult, but it is one which no keen student of economic theory, least of all teachers of economics, ought to put aside for a more convenient season. To the latter it would be good advice to tell them to read it before the beginning of the session which is looming immediately ahead. At very least it will cause them to scrutinize carefully some of the terms they have been accustomed to use, and, in general, will probably make them feel less confident about the correctness of their language than they were before the reading. The sub-title of the volume is "A Critique of Some Fundamental Economic Concepts" which, in the advertisement, is enlarged to "an application of logic to the field of economic theory, in an investigation of the relations between concepts and terms, between thought and lauguage."

That the volume will establish Professor Fraser's reputation as an acute thinker there can be no doubt. Whether, as is further suggested in the advertisement, it is the kind of book from which the lay reader will gain a clear impression of the scope and present condition of political economy is not so certain. Is it not better to be frank and say that unless the lay reader were closely acquainted with the literature of economic theory he would not appreciate the significance of one-tenth that Professor Fraser has to say? Given the requisite equipment, a reader will gain large profit from his study of the volume,

but for a reviewer not to make the above remark would be not to fulfil his function.

The first of the eighteen chapters contained in the volume is on "Some Logical Preliminaries," nearly all the remaining chapters being devoted to an examination of some economic term (*e.g.*, value, utility, cost, capital) with the object of showing the different meanings it has borne, or is capable of bearing, frequently with some indication of the meaning which Professor Fraser thinks it ought to bear. It is not that he seeks to standardise the meanings of terms ; rather he repudiates that aim, and makes the excellent point that a large part of the justification of a constant examination of economic terms is that the efflux of time and the course of events may change a meaning which was appropriate into one which is more or less inappropriate.

It would, of course, be too extraordinary to suppose that any reader could work through Professor Fraser's volume without frequent feelings of irritation, especially when he finds some meaning which he has attached to a term being rejected as of little value. Even so, he will find some comfort in the statements that "So long as we know what we are doing, there is no harm in using words in more than one sense, nor need we hesitate to take over terms from everyday usage, keeping their commonsense meanings when we can, but altering and adapting them to our purposes when it seems necessary."

G. W. Daniels

Report on the British Social Services, June, 1937.

(P.E.P. 7s. 6d. paper boards, 8s. 6d. cloth.)

The Report surveys the social services in their many aspects—the administration and the institutions administering them, their legal bases, the number of people affected, the types and the nature of the provided services, their costs and the methods of financing them, etc. The survey is admirably done,

though it will be understood that there is insufficient space for detailed treatment of all matters (for example, only a passing reference is made to the Midwives Act, 1936 and the administration of the various services is merely indicated). This is a defect inseparable, however, from the virtue of comprehensiveness which gives to this volume something of the qualities of a Blue Book. The important part played by the social services in the life of the people, the different aspects of the life of the individual which they affect and their cumulative value to him are brought out forcibly. The Report is well furnished with statistics and charts, and, as a whole, provides a most valuable guide to the social services.

Where reservations must be made is where the compilers depart from description to criticism and recommendation. Criticism falls broadly under three heads—that administration can be improved, that the services provided are in some respects deficient and that anomalies exist, and thirdly that the services need to be co-ordinated and a broad strategy evolved.

A convincing case is made out for the need of an inquiry into methods of administration : particularly it appears eminently reasonable to doubt whether the areas of the various local authorities are the optimum areas for the various services administered. In fact this is not a problem peculiar to the social services ; it is a problem of public administration. This, therefore, should be taken as one more plea for the consideration of the efficiency of local government which is coming to be demanded.

The above is concerned with relatively straight forward matters—given the services we want to provide or the aims towards which our services are directed how we can provide them most efficiently or how our ends can be best achieved. The second matter is of much greater complexity. The kind of criticism made is illustrated by the following quotations :

> "The medical benefits (of the Health Insurance Scheme) only apply to insured persons themselves." (p.22).
>
> "A revision of the scale of benefit allowances (under the Unemployment Insurance Scheme) in order to make them

compare rather more favourably with the allowances of the unemployment assistance board in family cases." (p. 24).

"The persistence of high rates of maternal mortality and morbidity suggests that the maternity services are still far from satisfactory." (p. 18).

"The provision of nursery schools and classes is still very inadequate." (p.15).

"For the great majority of boys and girls formal education ceases entirely at the age of 14 plus. The Education Act, 1936, raises the school leaving age to 15 in 1939, but its exemption provisions are very unsatisfactory." (p. 15).

The question immediately presents itself—are these criticisms justified, are there anomalies, or gaps or deficiencies? It is a major weakness of the Report that it asserts rather than argues. It is not legitimate to provide services "out of the bag" and to conclude that they ought to be provided now or " when funds are available." It is legitimate to put forward what one believes to be correct principles and what one thinks ought to be done in conformity with them, to argue one's conclusion and marshal expert opinion to prove the point. It is not only legitimate but desirable. Without this criticism will only convince the converted (among whom the present reviewer is inclined to stand).

The recommendation of the Report is open to much the same kind of objection. The following quotation will illustrate the conclusion reached. "The first and most essential proposal .... is that all those interested should now take stock of their assumptions and ideas on the subject and endeavour to work out an approach adapted to present and future rather than to past conditions. This is a responsibility of social service specialists and administrators, who alone can keep public opinion abreast of changing needs." (p. 176). With this end in view the Report recommends the establishment of a Permanent Statutory Committee (on the lines, it is said, of that concerned with unemployment insurance). The meaning of the first proposal is not altogether clear, but it appears to carry with it the suggestion that the evolution of the social services should be directed upon appropriate lines.

Our social services are something of a hodge podge (consider for example, the so-called insurance against unemployment) ; their form has been much influenced by considerations of expediency ; their extension has followed a somewhat haphazard course. Yet the idea, apparently implicit in the proposal, that the services can be rationalised through analysis, co-ordinates one with another in the light of revealed principles, and directed towards the solution of future problems as a consequence seems to beg the whole question propounded by the form of our social services. In the realm of administration, rationalisation and co-ordination can be attempted, and given expert knowledge and general goodwill are certainly possible. The same cannot be said where the problem is other than technical. Our social services reflect an attempt to work out the position of the individual in society, and that position, in the last resort, must be determined by the ethical, economic and political principles we come to accept. At present we are still groping in a fog of conflicting and half appreciated ideals, and the unformed appearance of the social services reflects this. It is not easy to see what the permanent committee advised could do to help : it could not, or should not, keep our conscience. What is needed is surely thought, discussion and publicity rather than expert advice. The Report should be of value in encouraging these, for the information on which judgment must be formed is most generously, attractively and impartially provided.

J. STAFFORD

The Science of Social Adjustment. By Sir Josiah Stamp. (Macmillan. 7s. 6d. net.)

The above title is not to be taken to suggest that there already exists a science of social adjustment and that the contents of the volume are an exposition of its principles. Rather, it is because such a science does not exist that the distinguished author has applied his mind to some of the problems of its formulation and here we are given the results. The volume contains four chapters, the first comprising an enlarged and

modified edition of the author's address as last year's President of the British Association, and the second an amplified and revised version of his Galton Lecture, delivered before the Eugenics Society in 1934 ; the third is based on the Norman Lockyear Lecture for 1935, and the fourth, a valuable supplement to the other three chapters, consists of entirely new matter.

How these chapters are linked together cannot be better shown than by quoting the paragraphs with which they are prefaced : (1) "Wherever and whenever new science touches society it creates a disturbance which has hitherto been mostly accepted as inevitable, but is often a high price for progress. The study and control of this impact constitutes the science of social adjustment." (2) "The control and direction of the numbers of the people, with eugenic and economic ideals, is the background of the science of social adjustment." (3) "Creation and use of bountiful resources is the true aim of science applied to man's needs. The relation of parts to each other, and of the result to social desire, requires measurement and definition as the beginning of the science of social adjustment." (4) "In the science of social adjustment, new or intensified research is required at a score of distinct points."

Stated briefly the aim of the science of social adjustment, as the author presents it, is by a greatly extended application of scientific method in the study of society to ensure that scientific advance in general shall be deliberately conducive to human well-being. In his consideration, Sir Josiah makes no attempt to disguise the difficulties which have to be overcome in the building-up of such a science and, in its course, he manages in a gentle but quite effective manner, to prick a number of bubbles which even men of science, when they stray outside their own subject, are prone to cast on the air. Most decidedly this is a volume which ought to be read by both the specialised student, whatever his subject, and the layman. Of one thing the author can be certain : every kind of reader will appreciate the long quotation in the first chapter.

G. W. DANIELS